

Fig. 1a

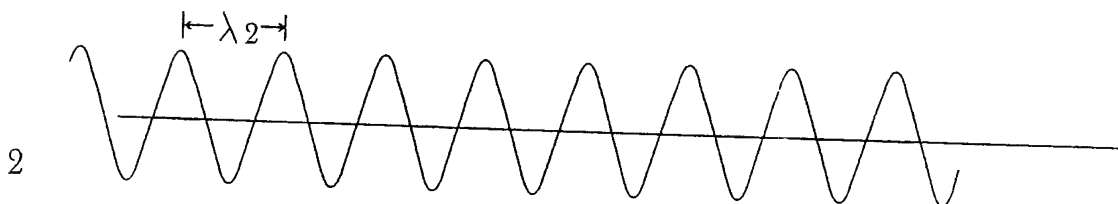


Fig. 1b

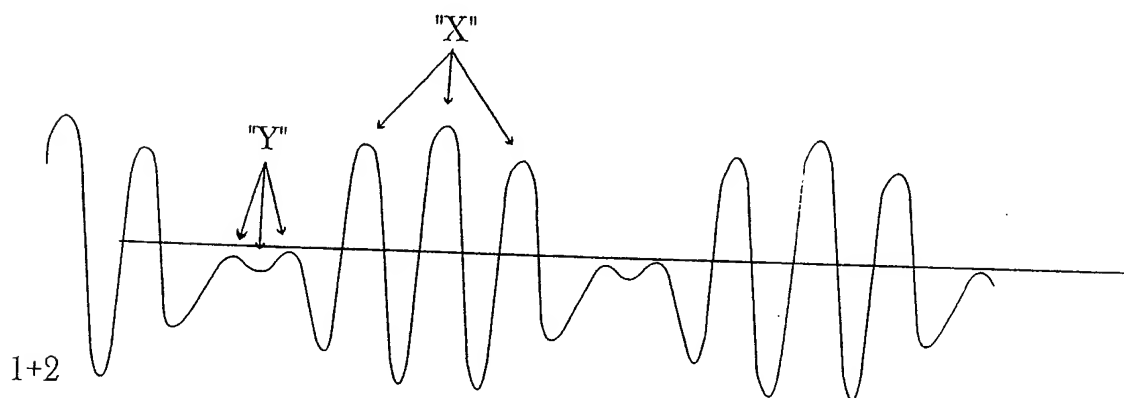


Fig. 1c

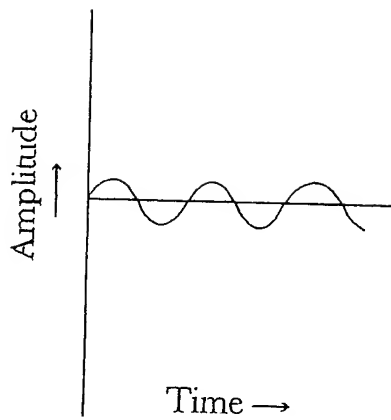


Fig. 2a

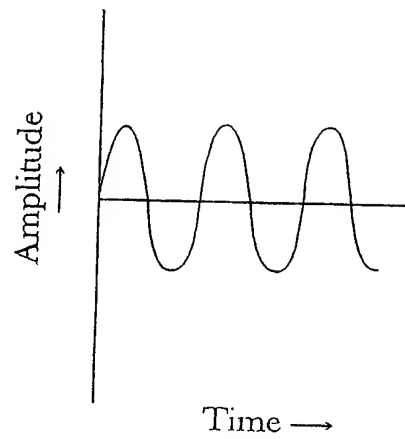


Fig. 2b

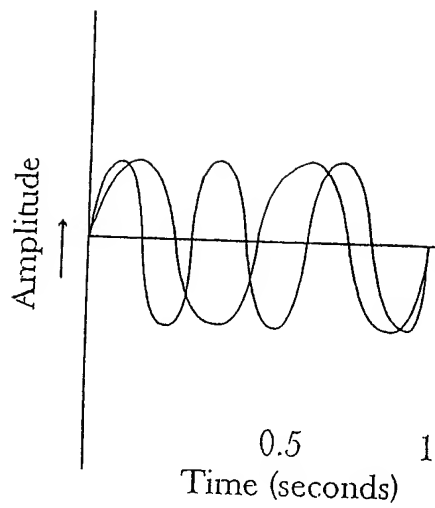


Fig. 3a

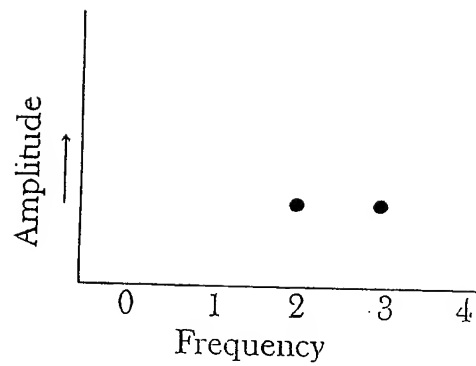


Fig. 3b

Initial Frequencies (Hz)	
400	100
400 + 100 = 500	400 - 100 = 300
500 + 300 = 800	500 - 300 = 200
800 + 200 = 1000	800 - 200 = 600
1000 + 600 = 1600	1000 - 600 = 400
Sum (Added) Frequencies (Hz)	Difference (Subtracted) Frequencies (Hz)
400	100
500	300
800	200
1000	600
1600	400
2000	1200
3200	800

Fig. 4

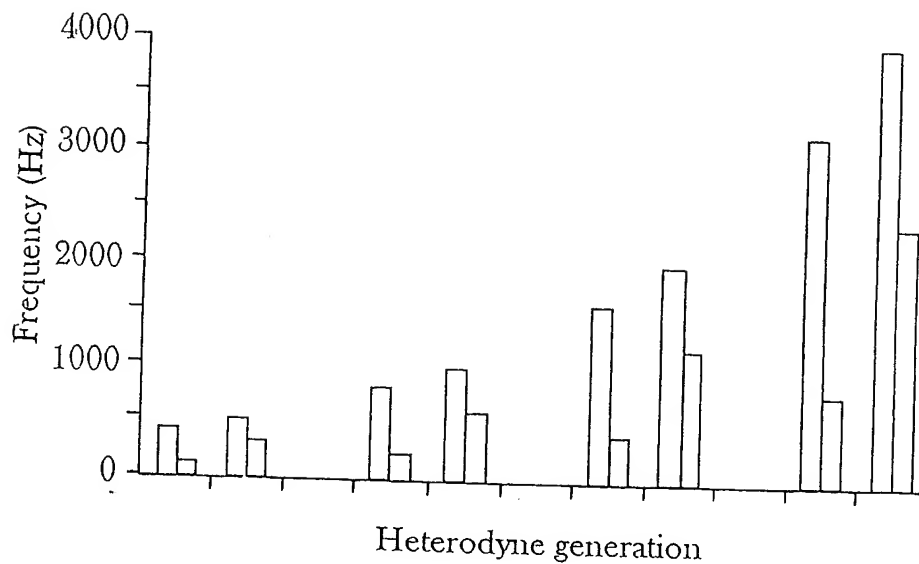


Fig. 5

Fig. 6a



Fig. 6b



Fig. 6c

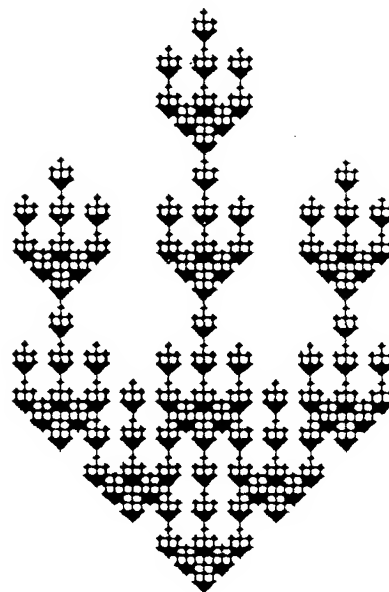


Fig. 6d

Fig. 7a

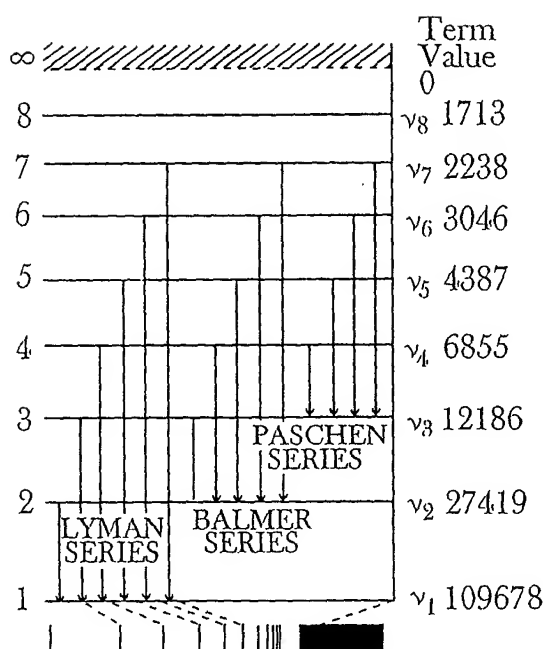


Fig. 7b

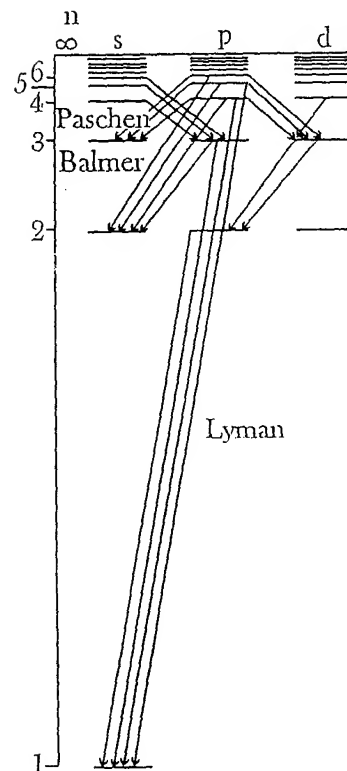


Fig. 8a

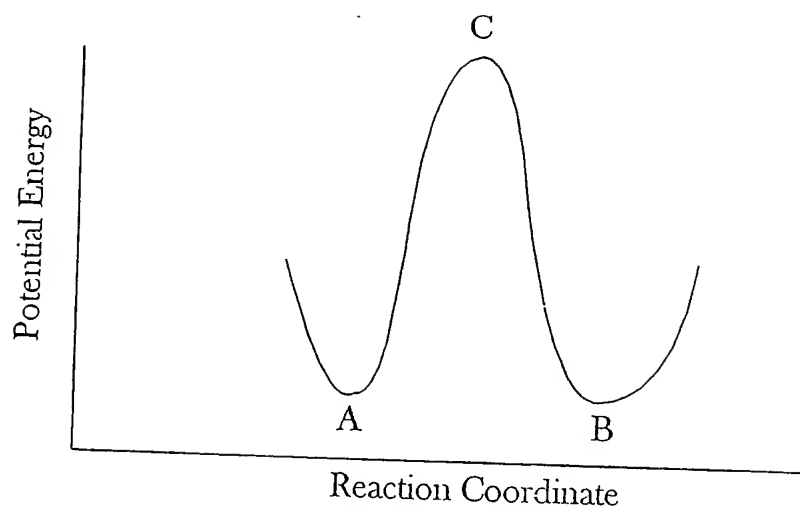


Fig. 8b

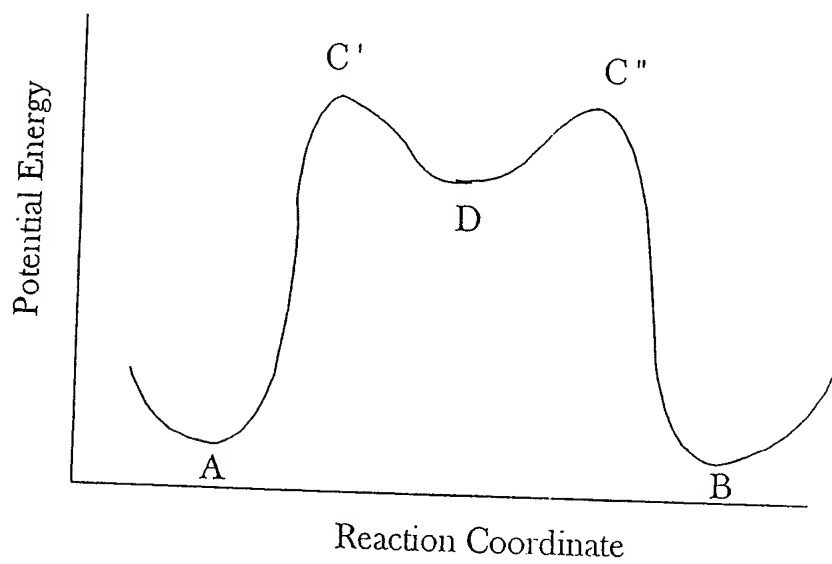
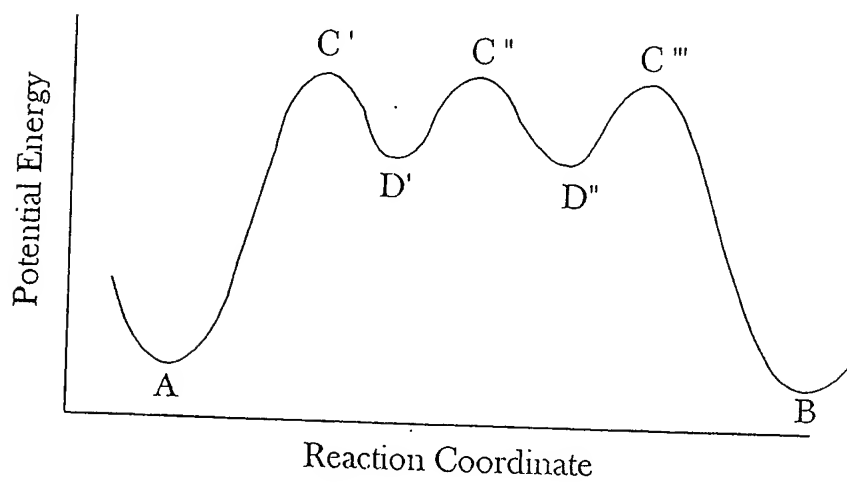


Fig. 8c



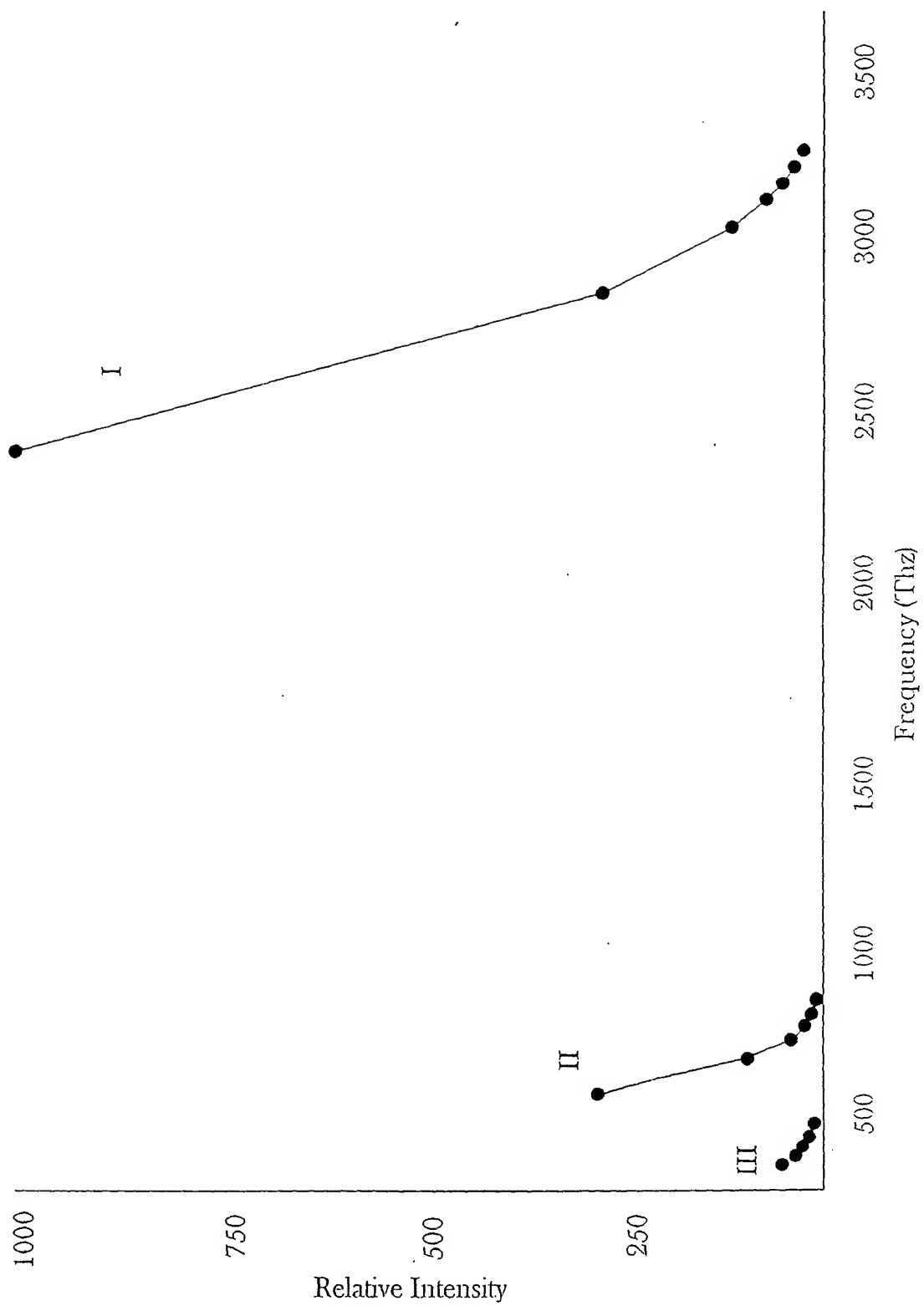


Fig. 9a

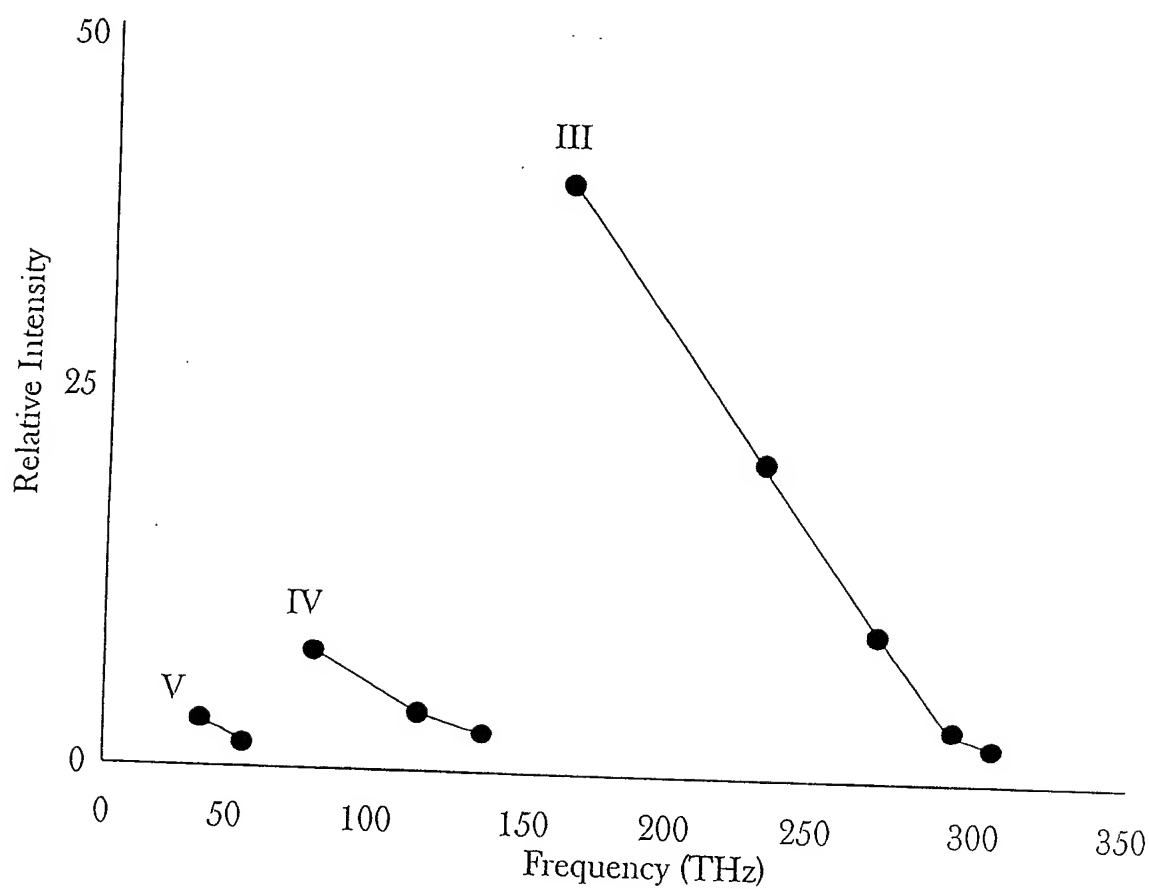


Fig. 9b

Frequency Curves - THz (relative intensity)

V	IV	III	II	I
40 (6)	74 (15)	160 (40)	456 (300)	2466 (1000)
64 (4)	114 (8)	234 (20)	616 (80)	2923 (300)
	138 (5)	274 (12)	690 (30)	3082 (100)
		298 (7)	731 (15)	3156 (50)
		314 (5)	755 (8)	3196 (30)
			770 (6)	3220 (20)
			781 (5)	3236 (15)

Fig. 10

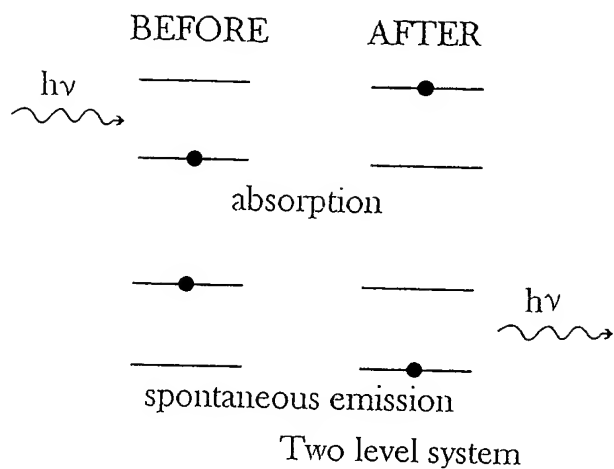


Fig. 11a

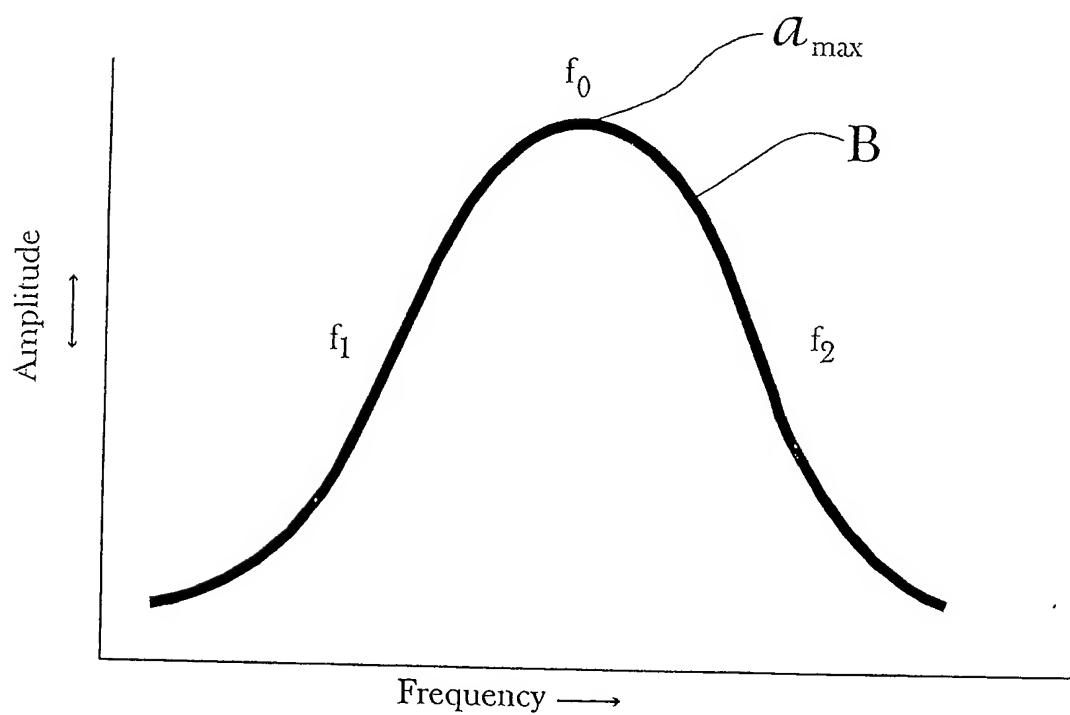
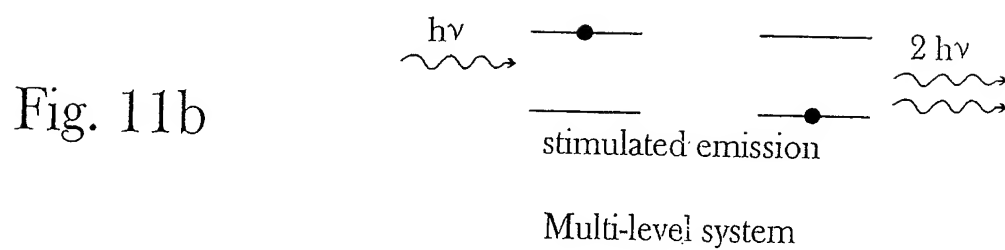


Fig. 12

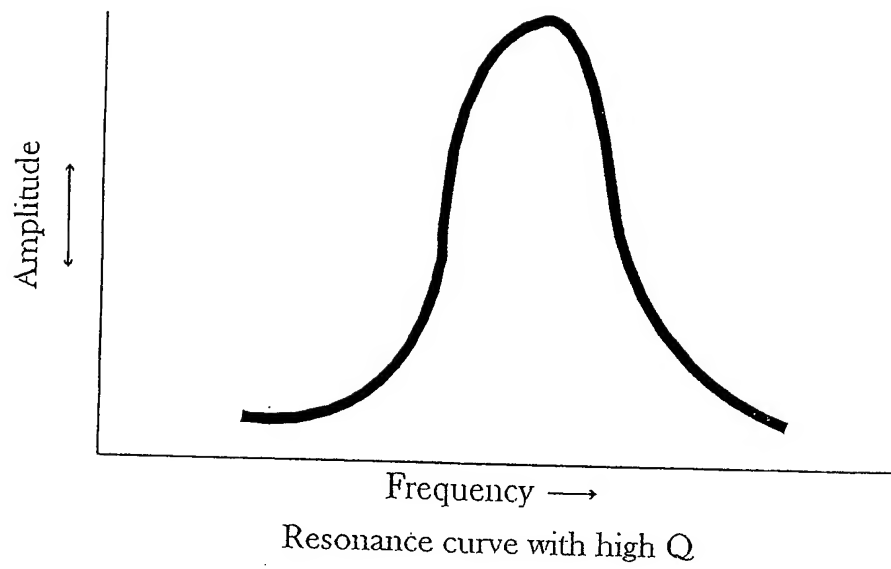


Fig. 13a

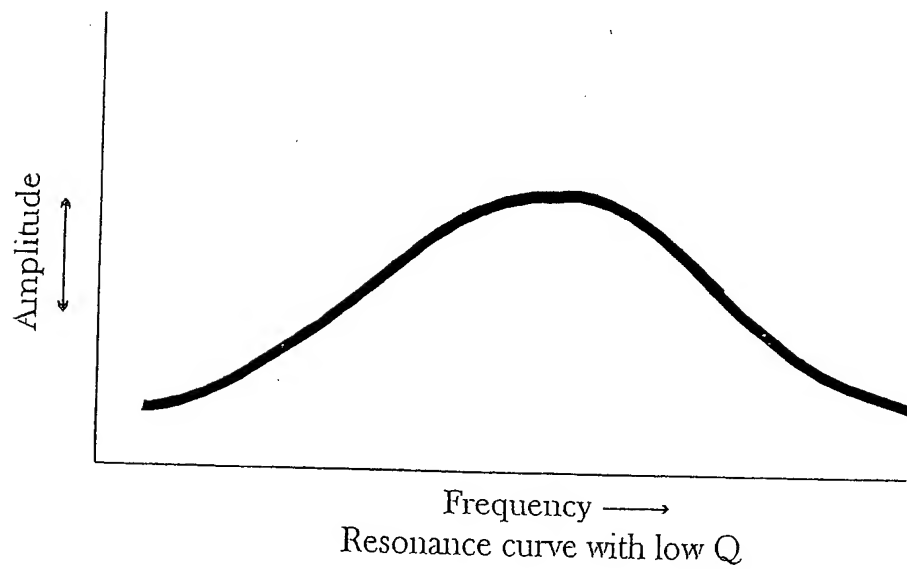


Fig. 13b

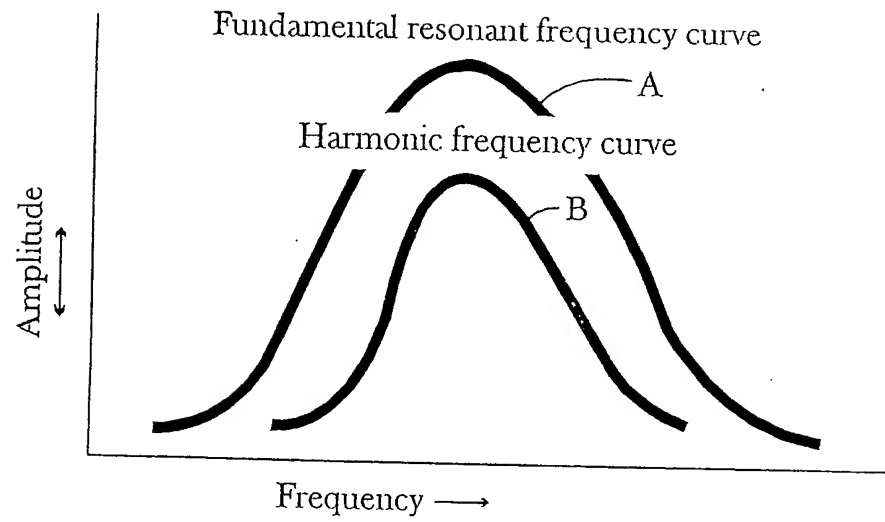
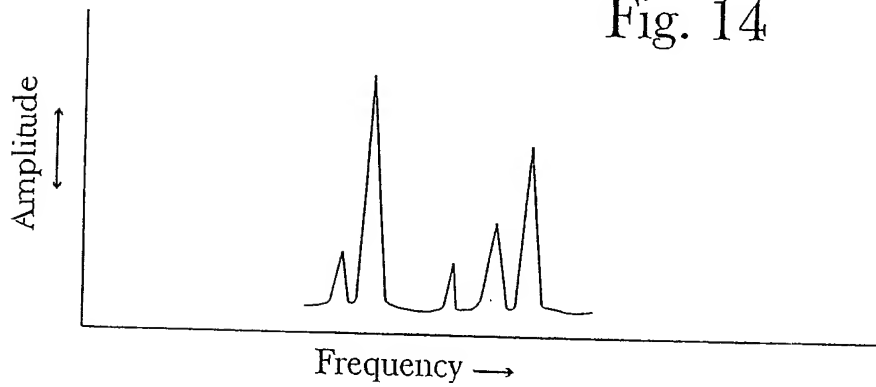
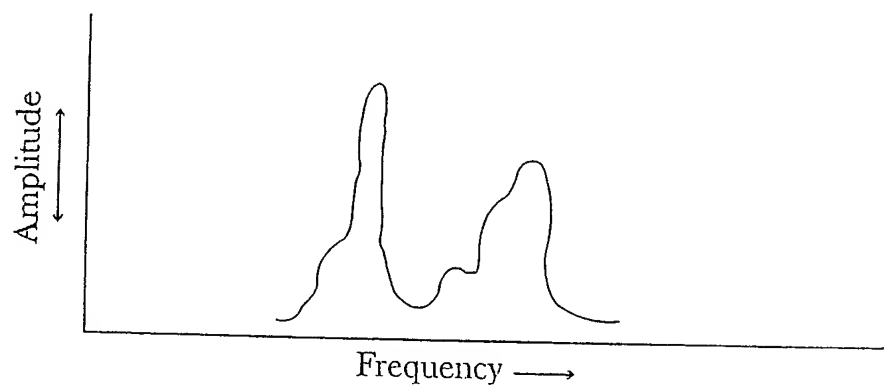


Fig. 14



Spectral pattern at low temperature

Fig. 15a



Spectral pattern at moderate temperature

Fig. 15b

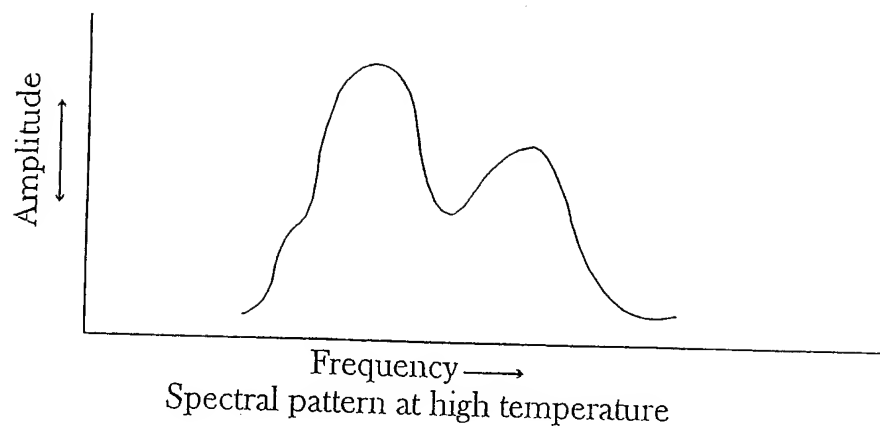


Fig. 15c

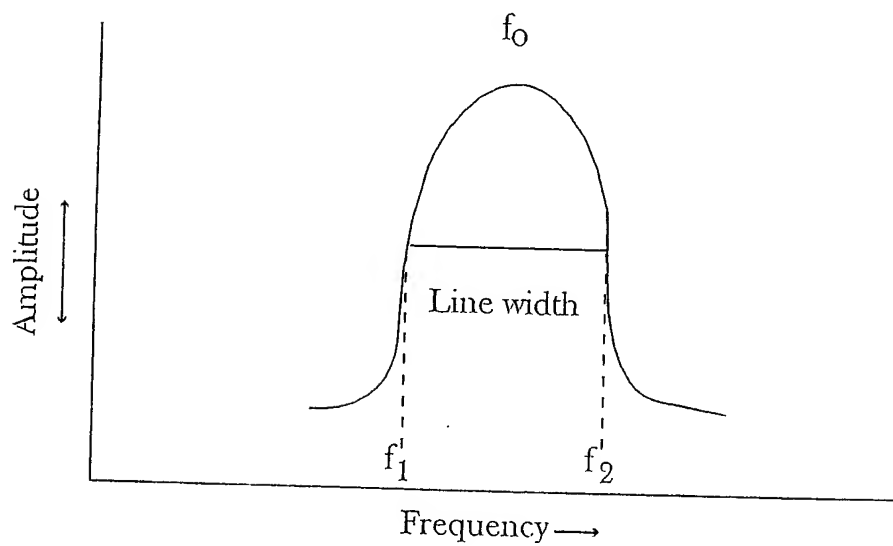


Fig. 16

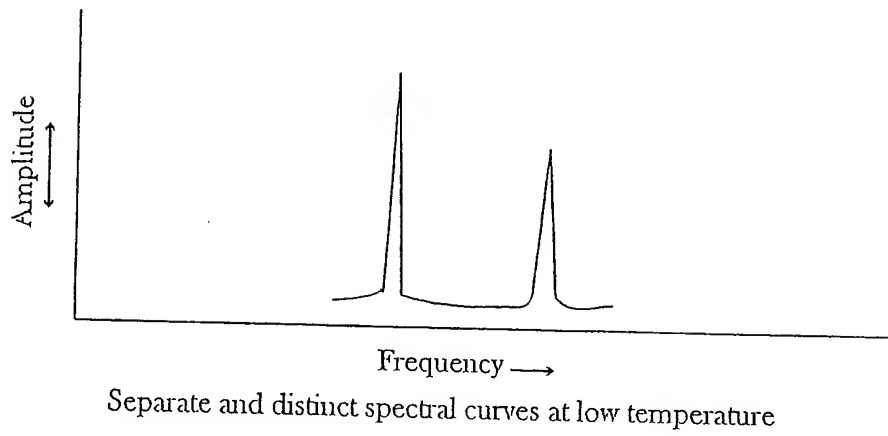


Fig. 17a

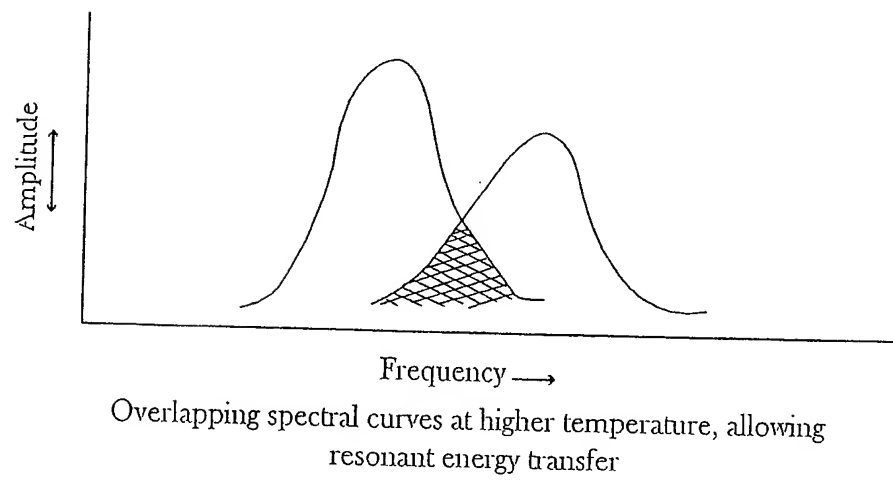


Fig. 17b

Fig. 18a

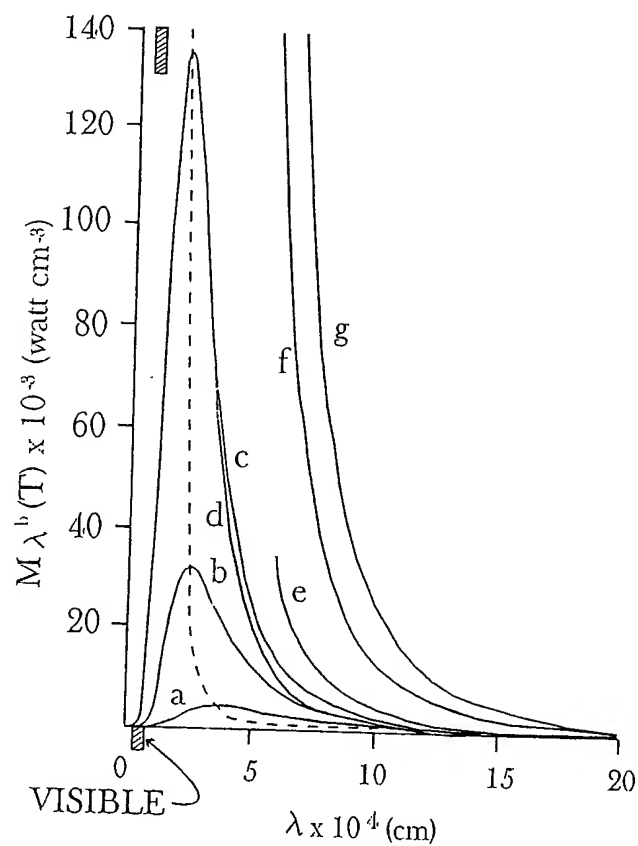
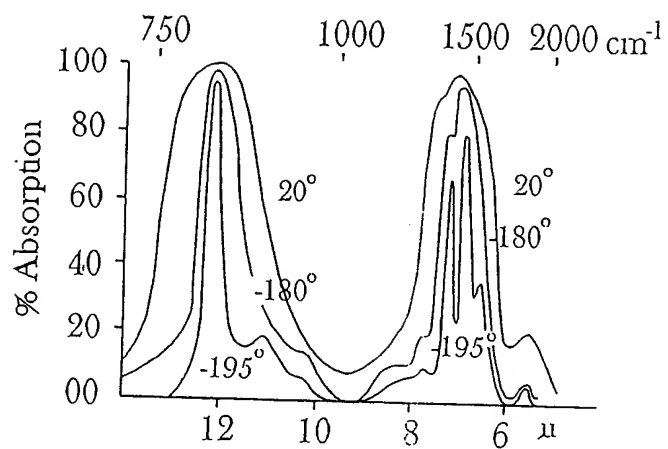
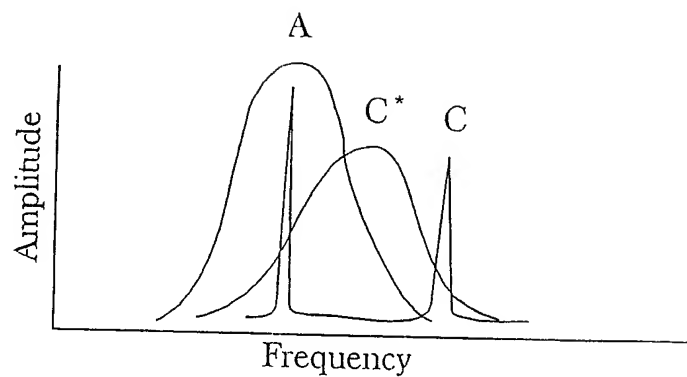
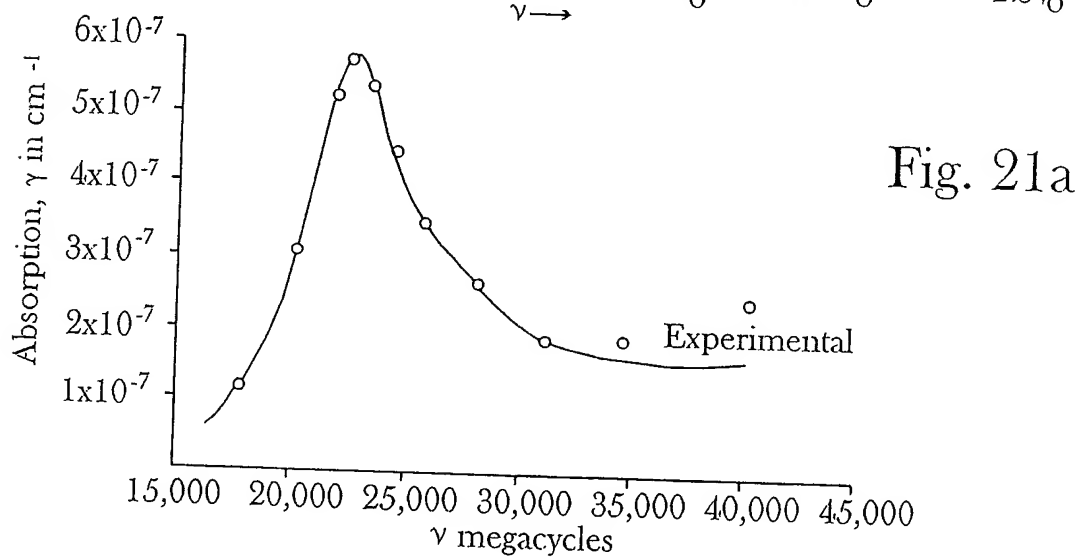
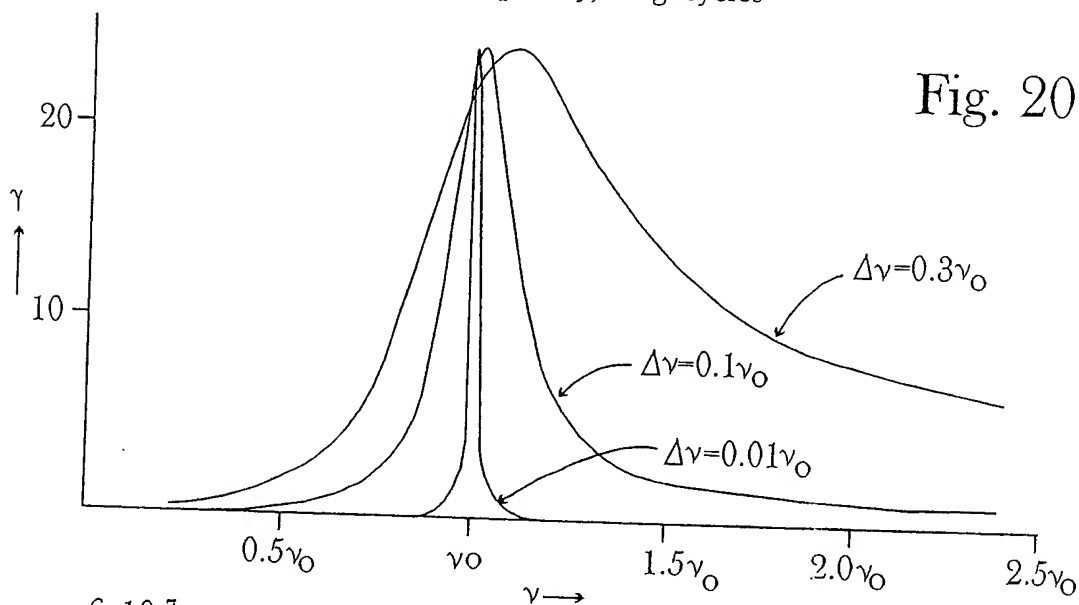
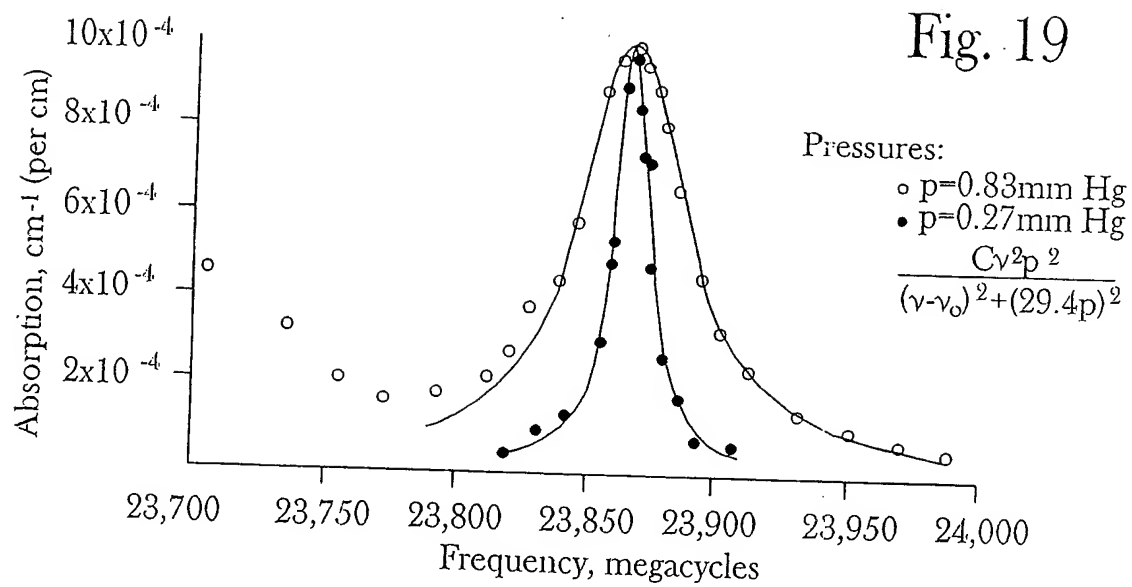


Fig. 18b

Fig. 18c





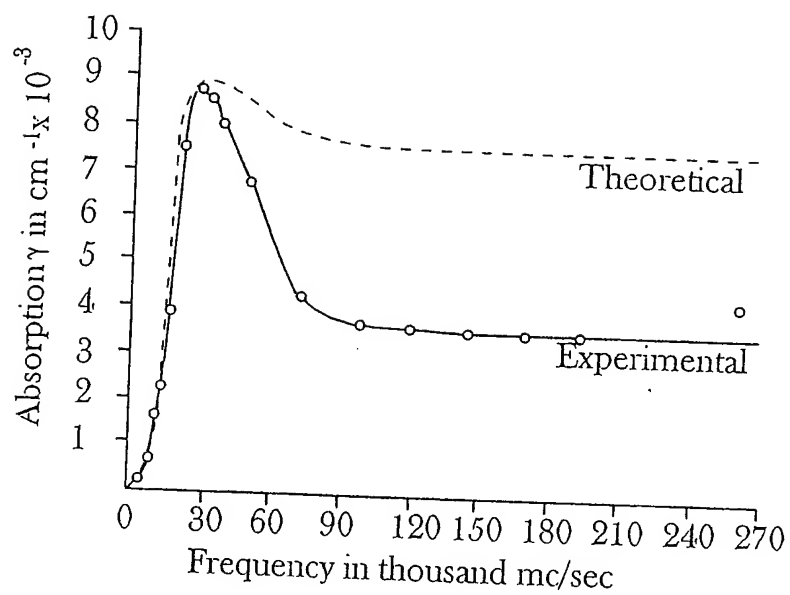


Fig. 21b

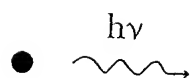


Fig. 22a

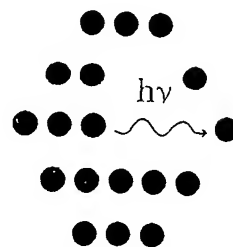


Fig. 22b



Fig. 23a

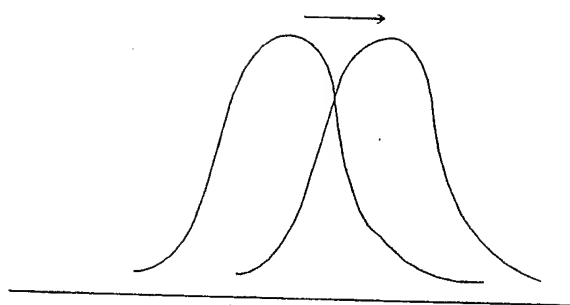


Fig. 23b

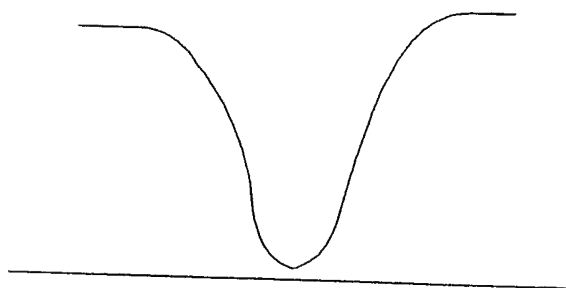


Fig. 23c

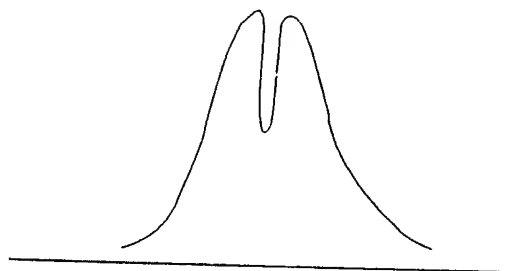
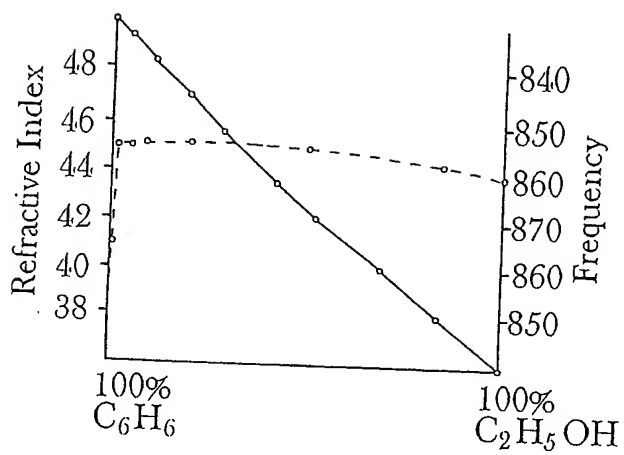
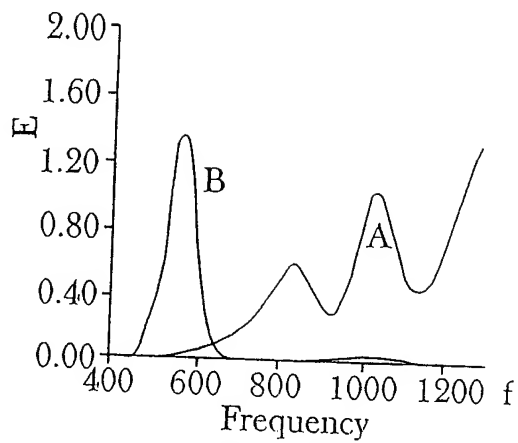
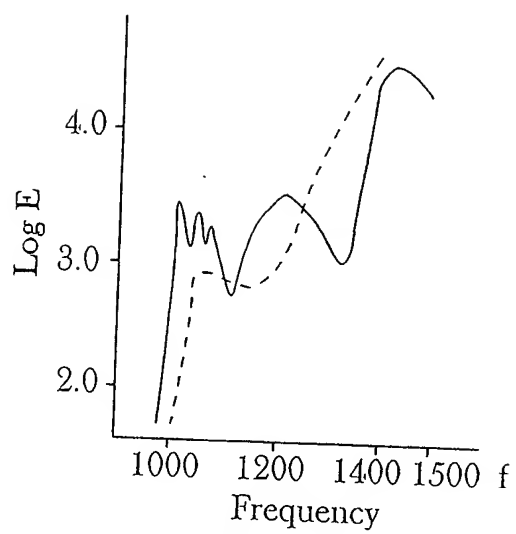


Fig. 23d



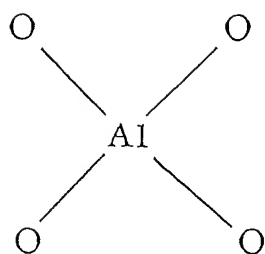


Fig. 25a

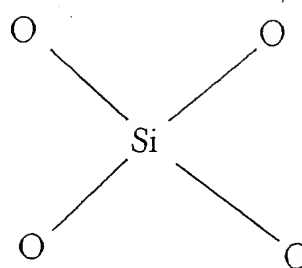


Fig. 25a

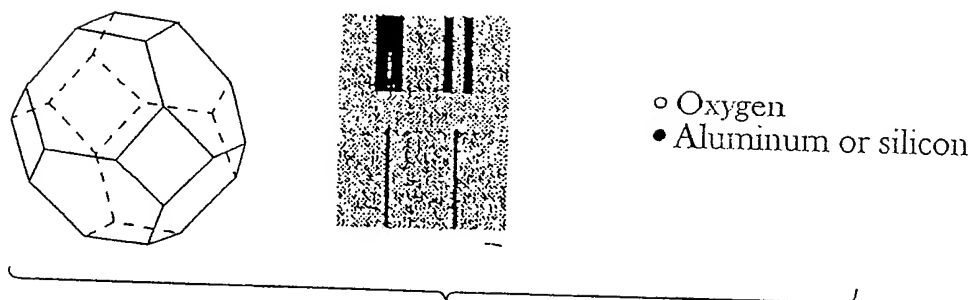


Fig. 26a

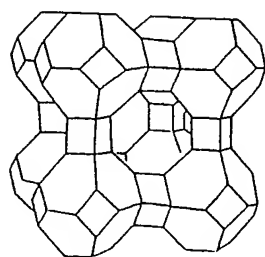


Fig. 26b

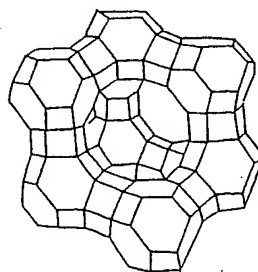


Fig. 26c

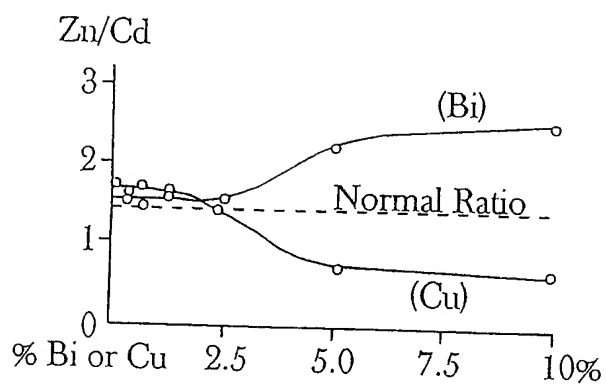


Fig. 27

Fig. 28

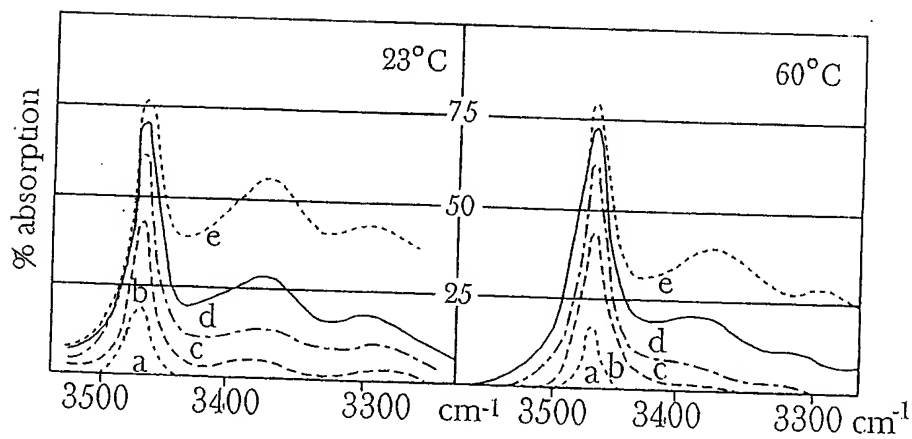
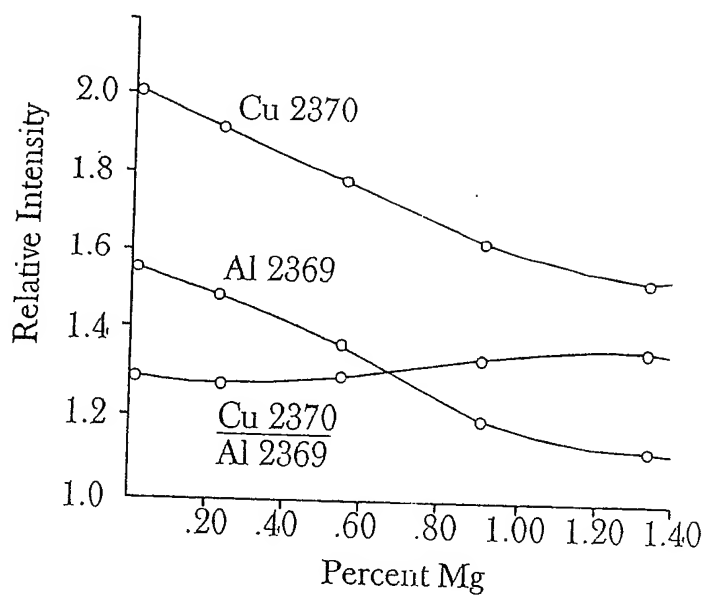


Fig. 29

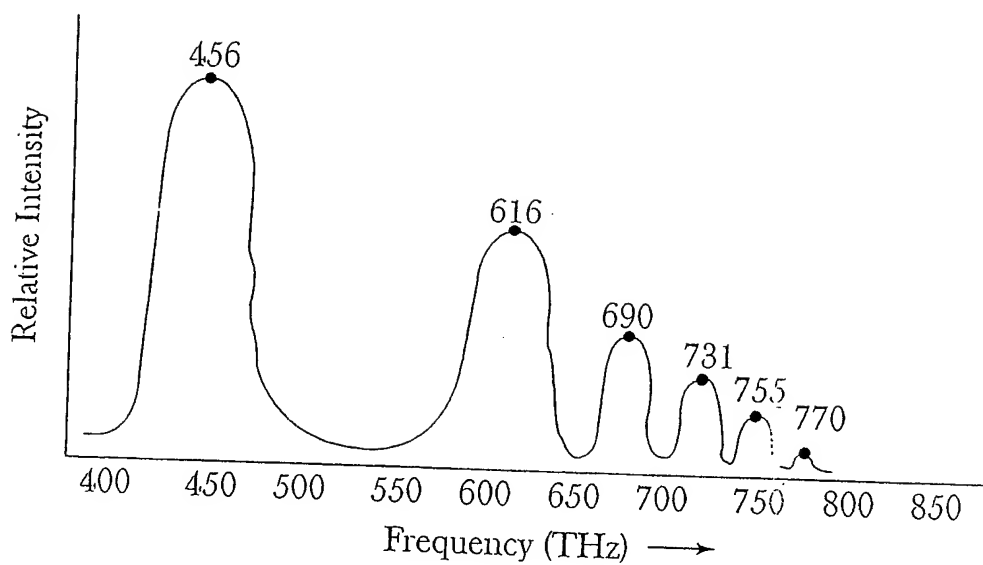
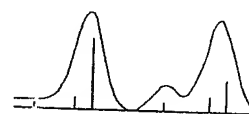
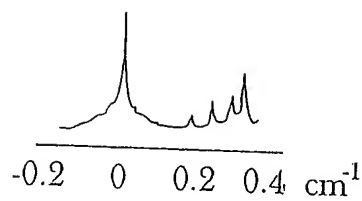


Fig. 30a



Emission spectrum
 $T = 50\text{K}$
 Fig. 30b



High resolution spectrum
 Fig. 31

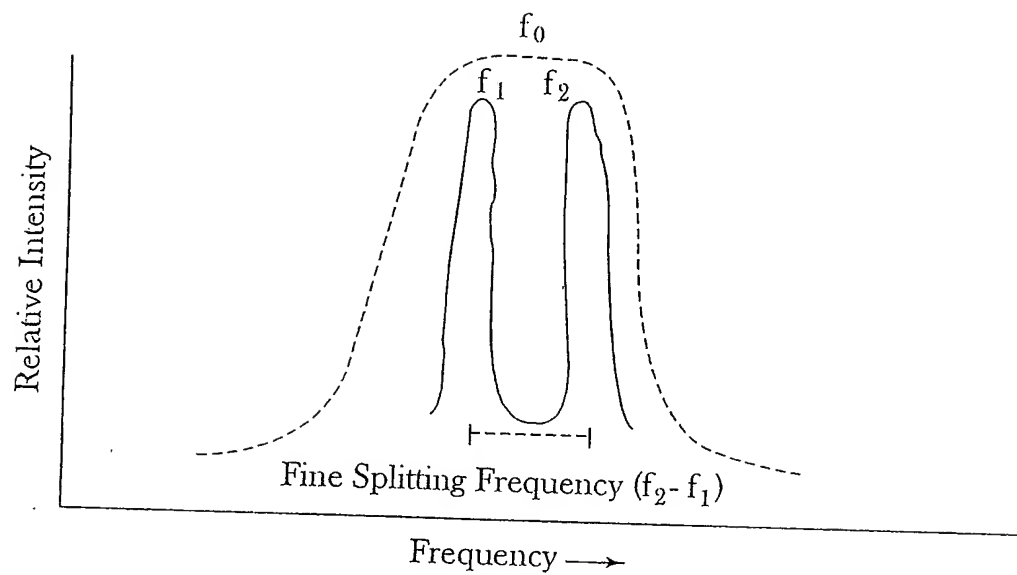


Fig. 32

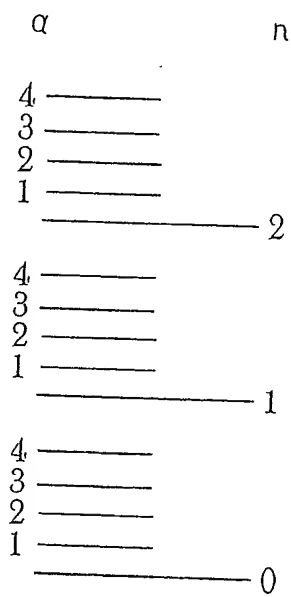


Fig. 33

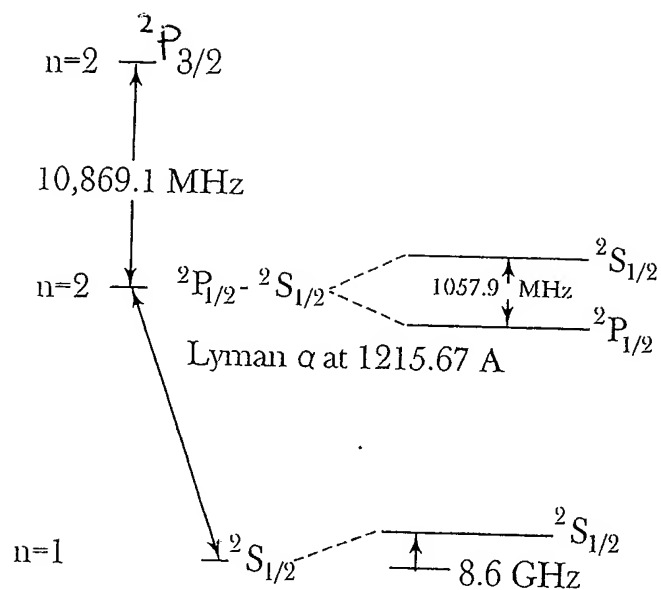


Fig. 34

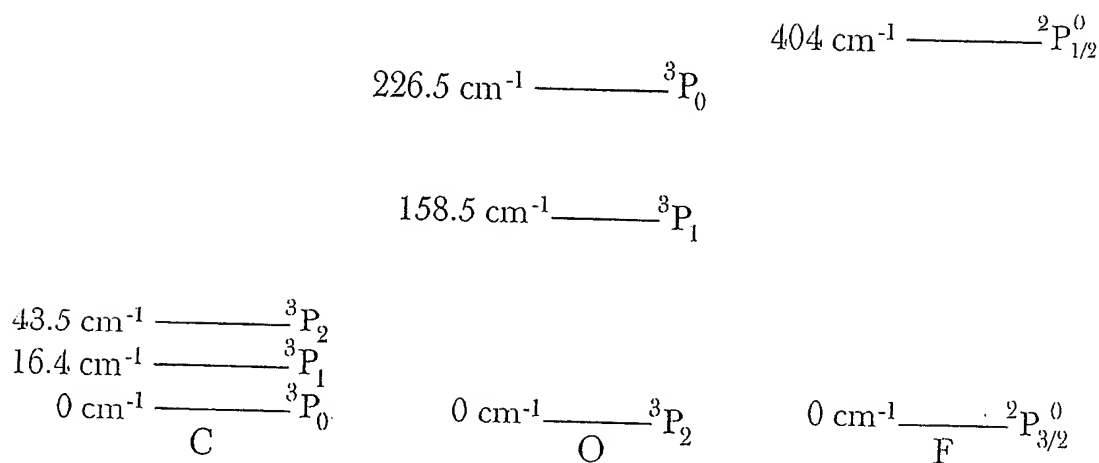
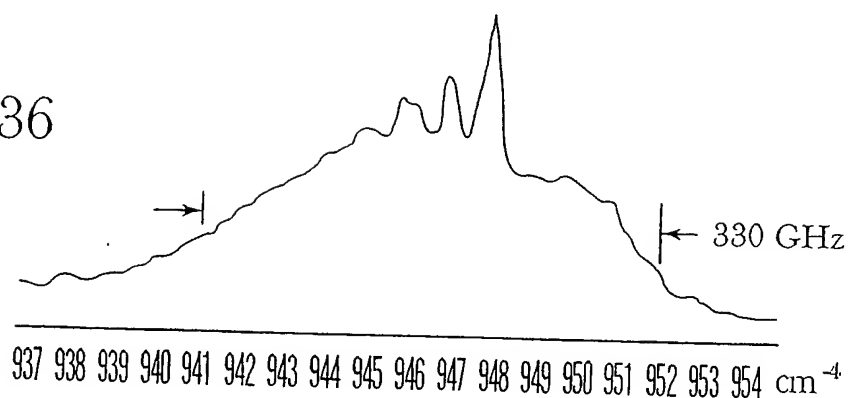


Fig. 35

Fig. 36



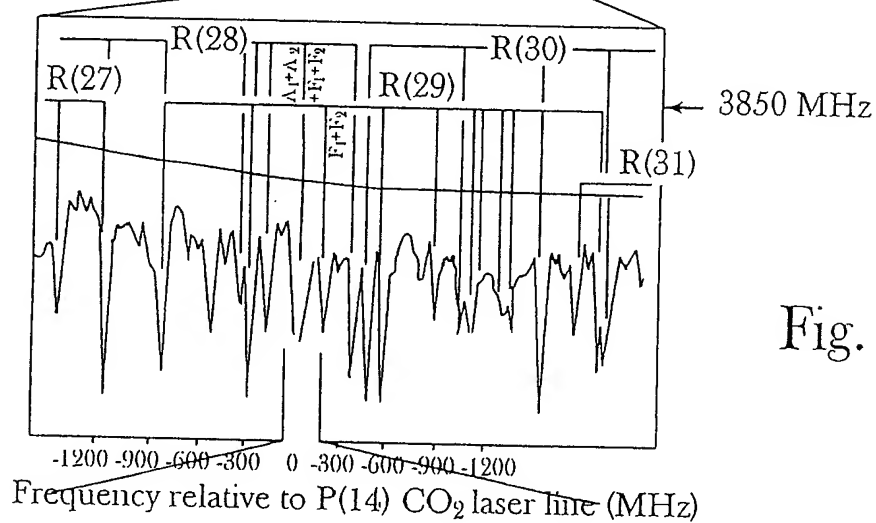
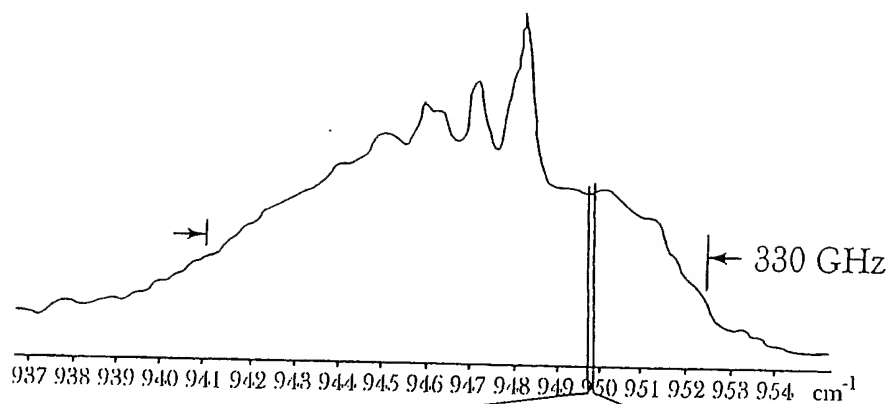


Fig. 37a

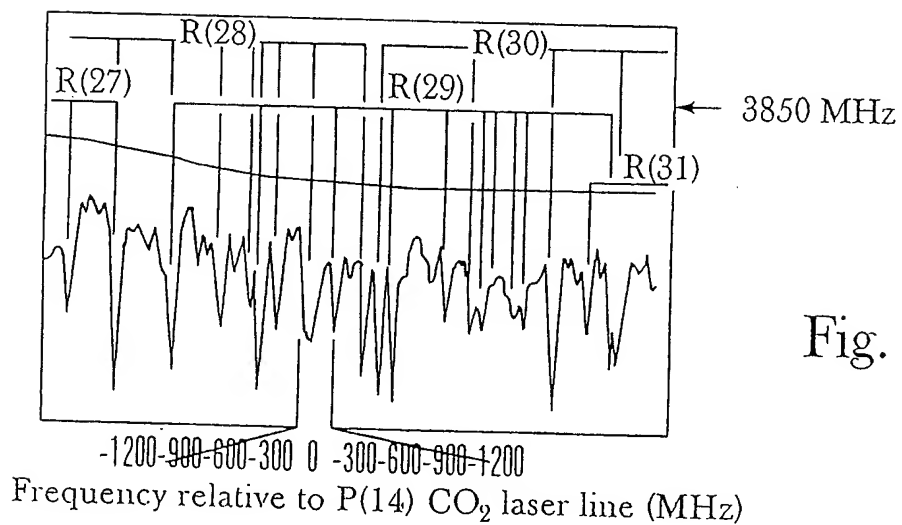


Fig. 37b

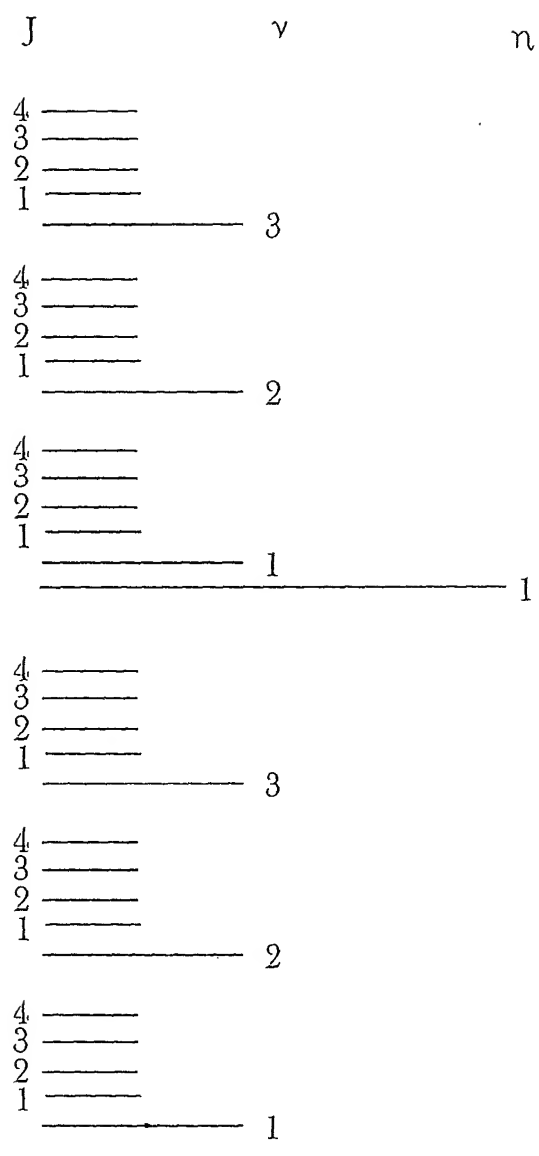


Fig. 38

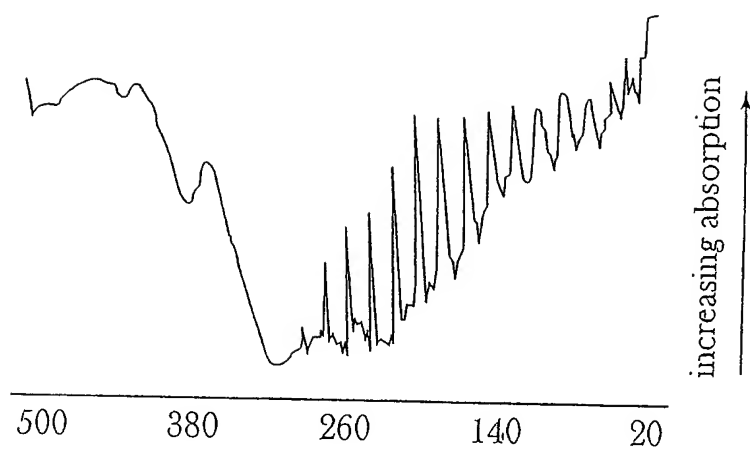


Fig. 39a

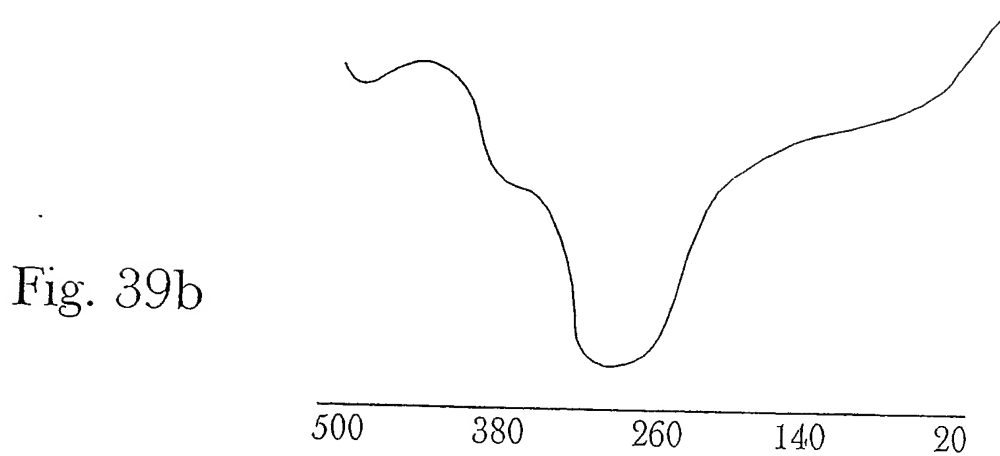


Fig. 39b

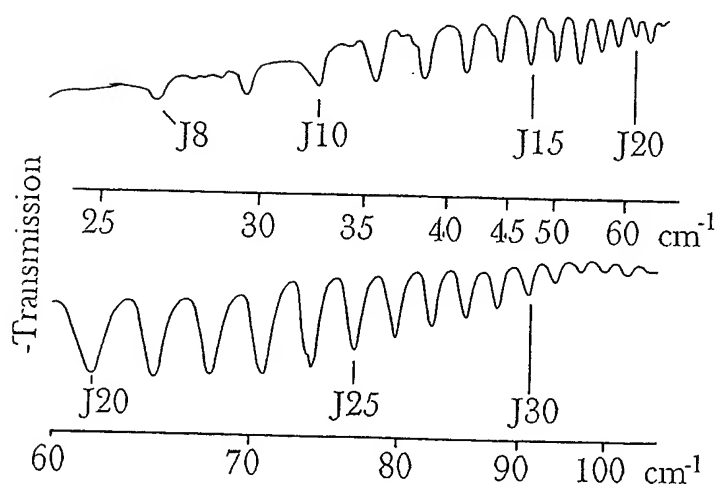


Fig. 40

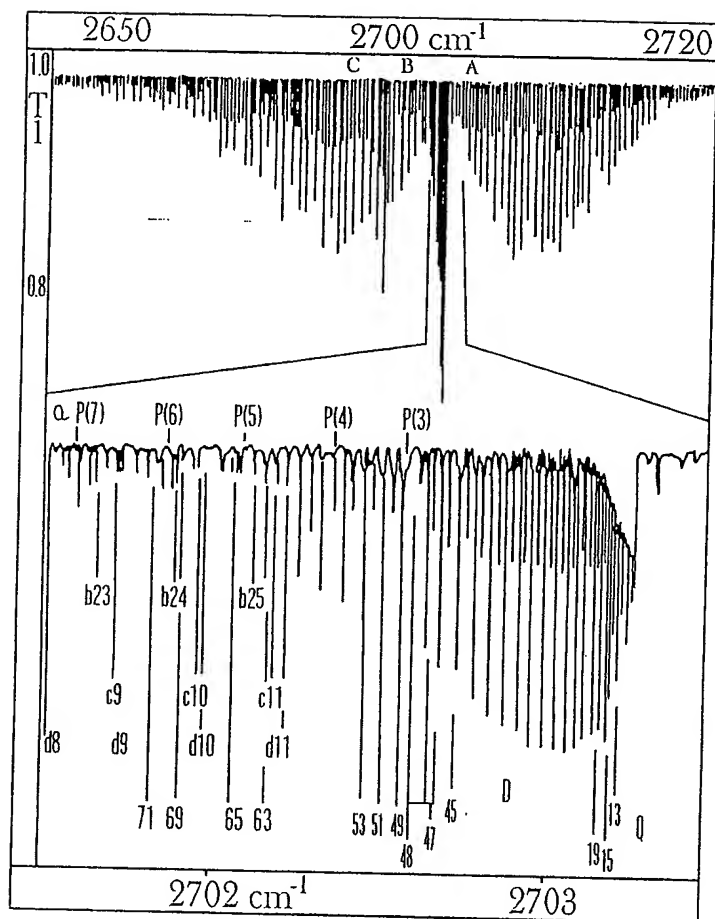
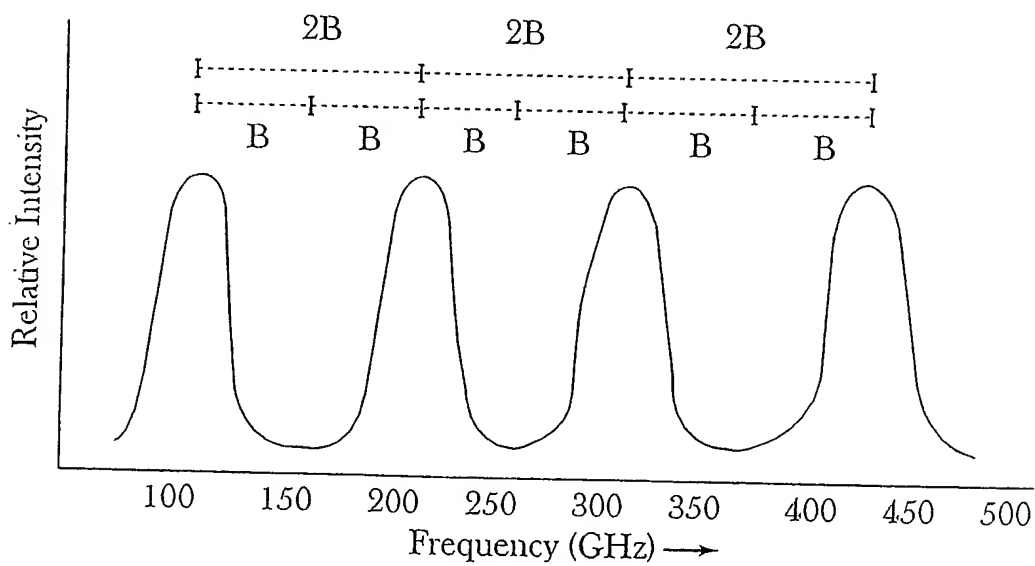


Fig. 41

Fig. 42



<u>Rotational and Vibrational Frequencies for LiF</u>				
<u>Rotational Transition</u>				
0→1	89,740.46	88,319.18	86,921.20	
1→2	179,470.35	176,627.91	173,832.04	171,082.27
2→3	269,179.18	264,915.79	260,722.24	256,597.84
3→4	358,856.19	353,172.23	347,581.39	342,082.66
4→5	448,491.07			
Vibrational Level	0	1	2	3

Fig. 43a

<u>Rotational and Vibrational Frequencies for LiF</u>				
Differences Between Rotational And Vibrational Frequencies (MHz) For LiF				
<u>Rotational Transition</u>				
0→1	1,421.28	1,397.98		
1→2	2,842.44	2,795.87	2,749.77	
2→3	4,263.39	4,193.55	4,124.40	
3→4	5,683.96	5,590.84	5,498.73	
4→5	7,104.24			
Vibrational Level	0	1	2	3

Fig. 43b

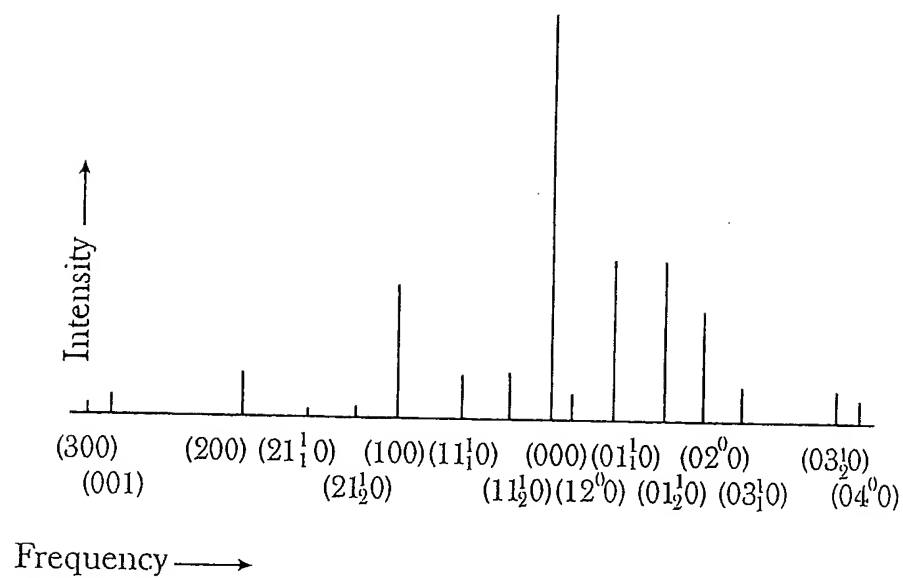


Fig. 44

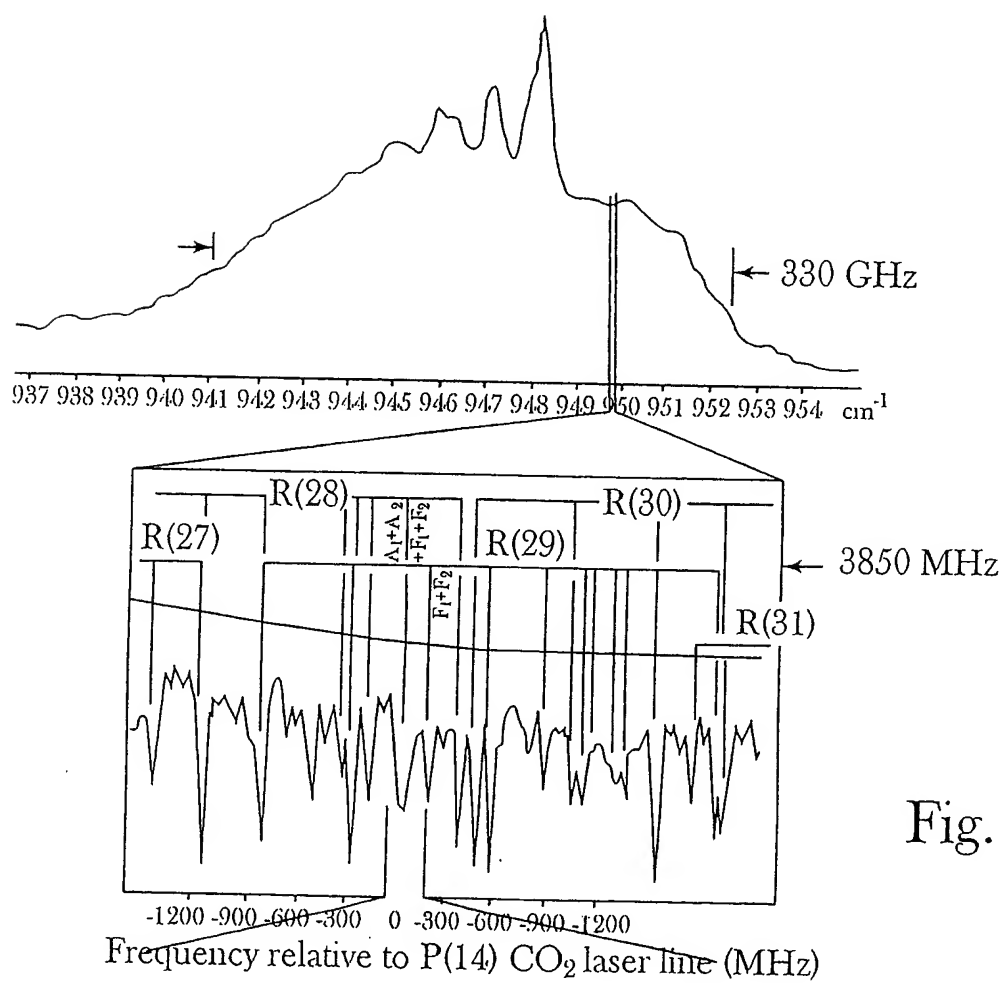


Fig. 45

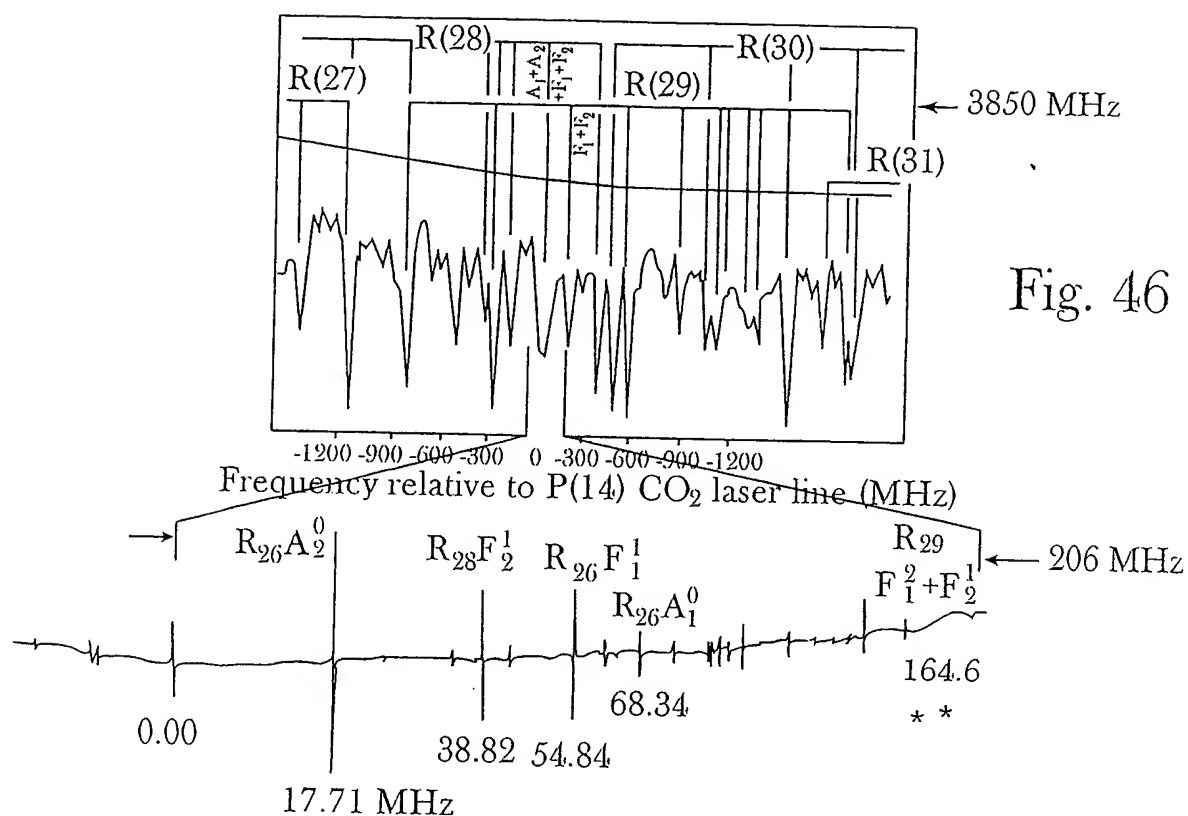


Fig. 46

Fig. 48

Fig. 47a

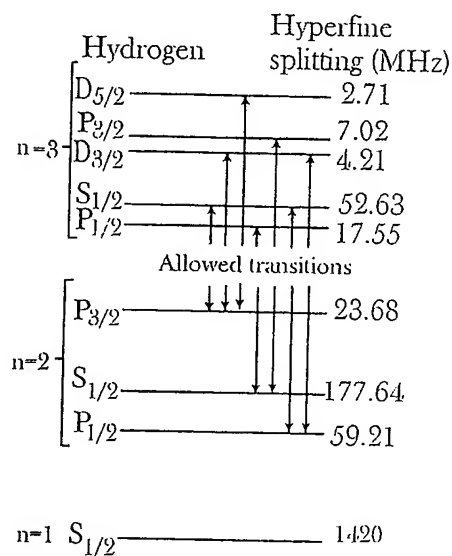
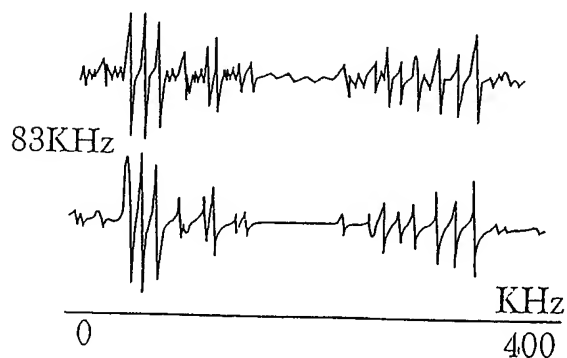
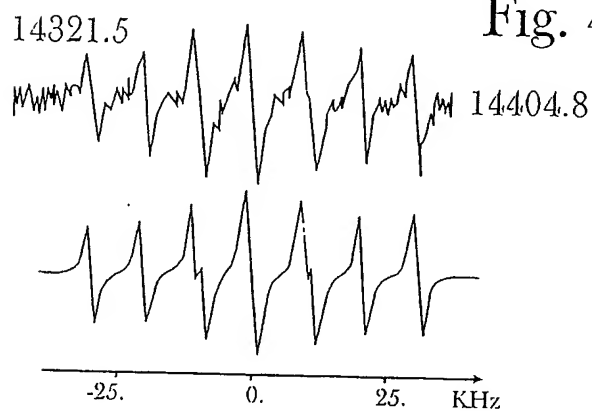


Fig. 47b

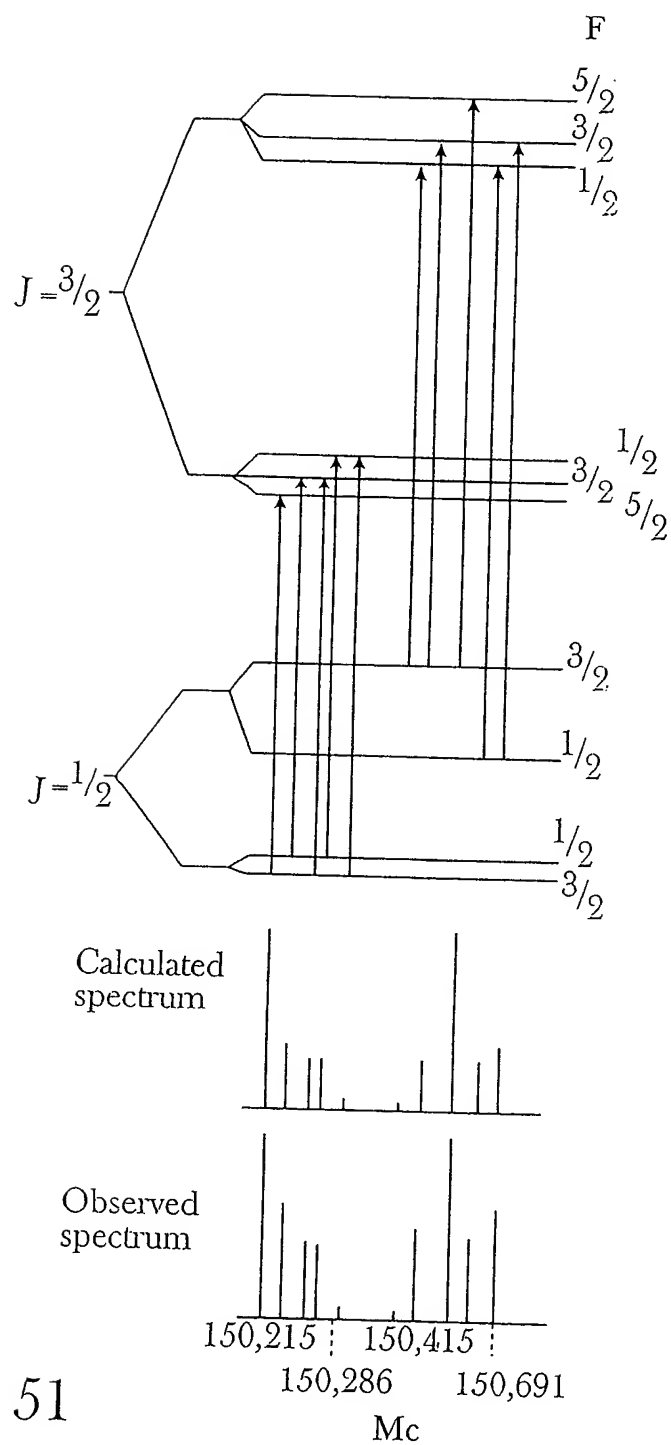


Fig. 51

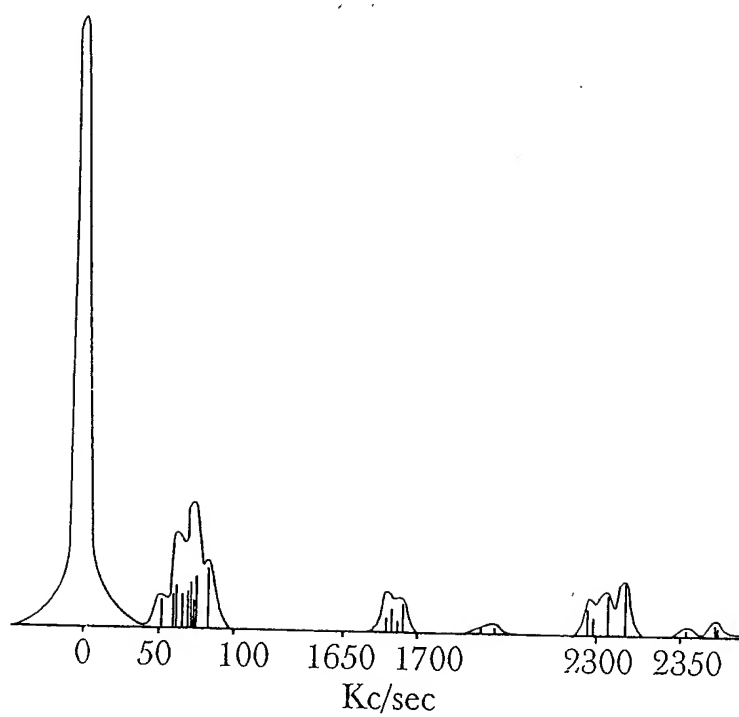


Fig. 52

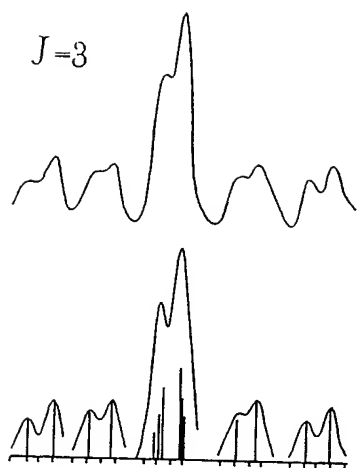


Fig. 53

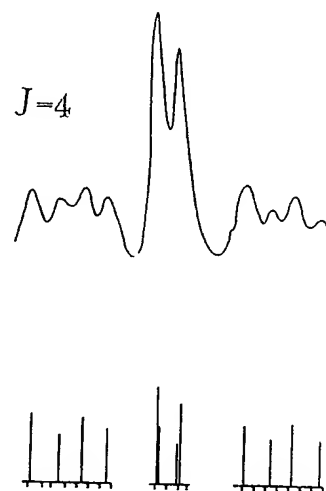


Fig. 54

Fig. 55

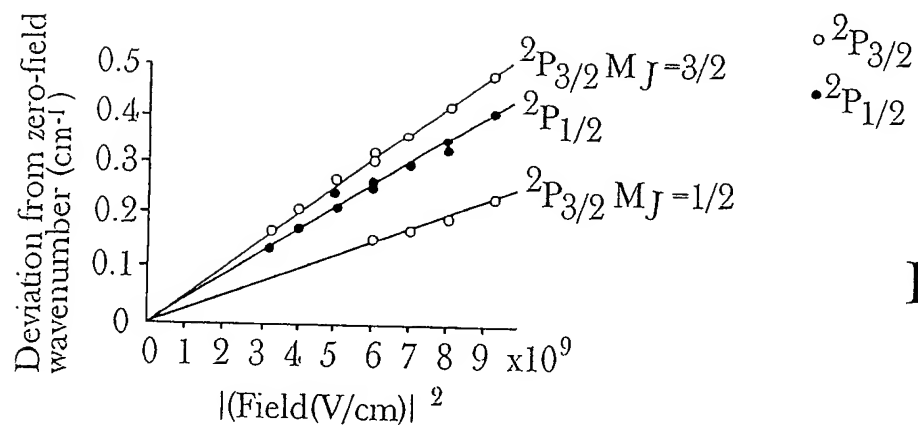
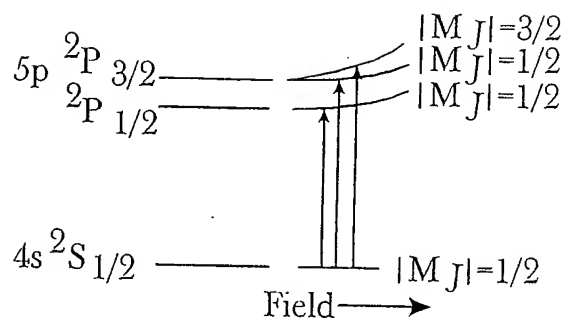
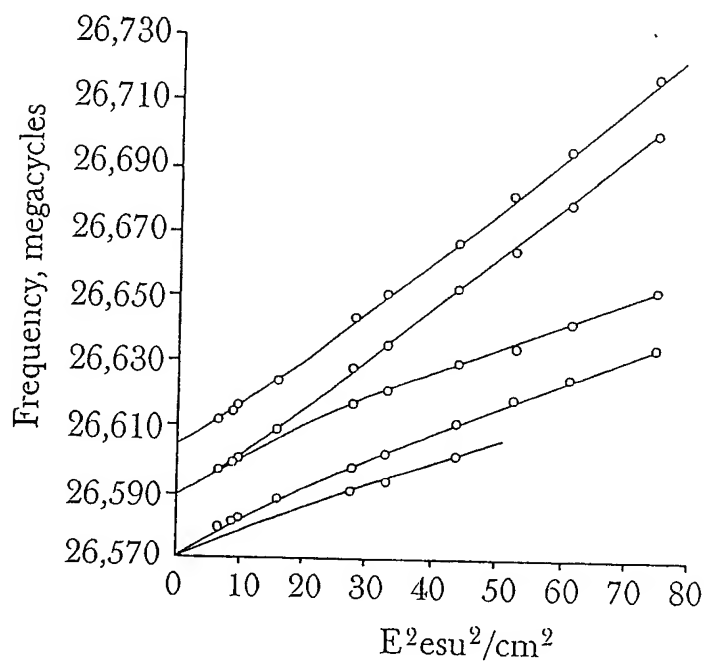


Fig. 56

Fig. 57



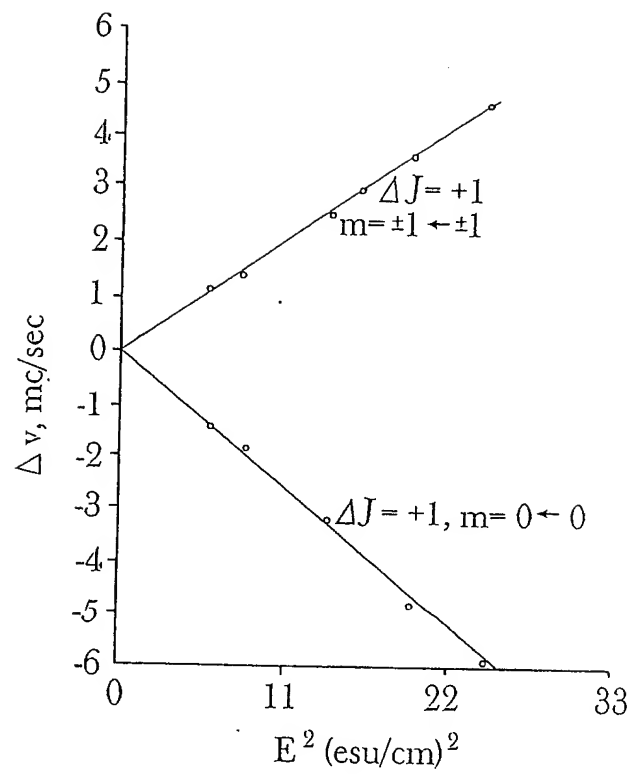


Fig. 58

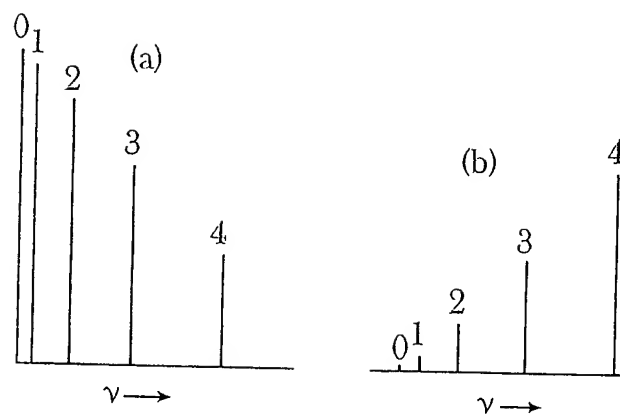


Fig. 59

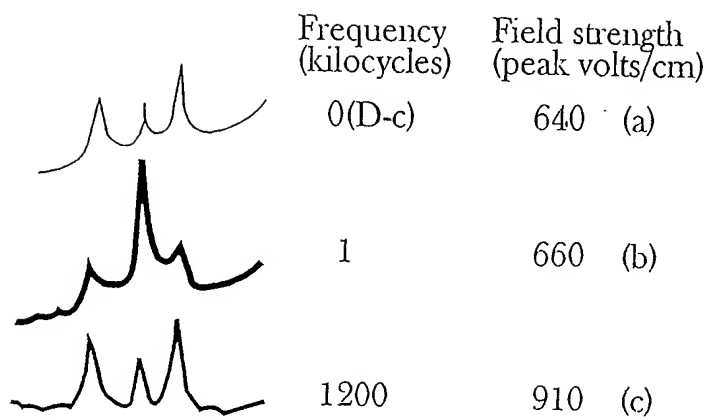


Fig. 60

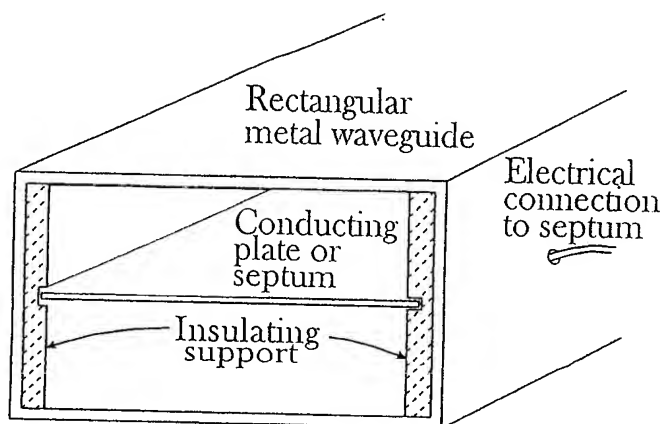
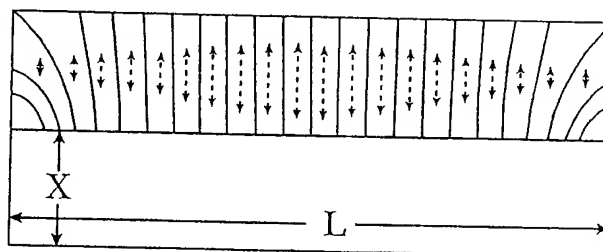


Fig. 61a

Fig. 61b



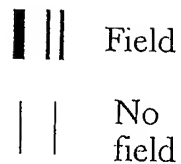


Fig. 62a

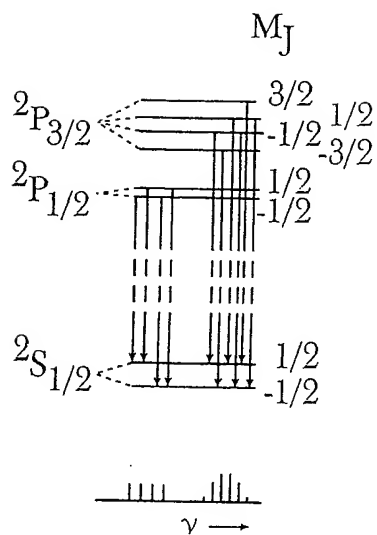


Fig. 62b

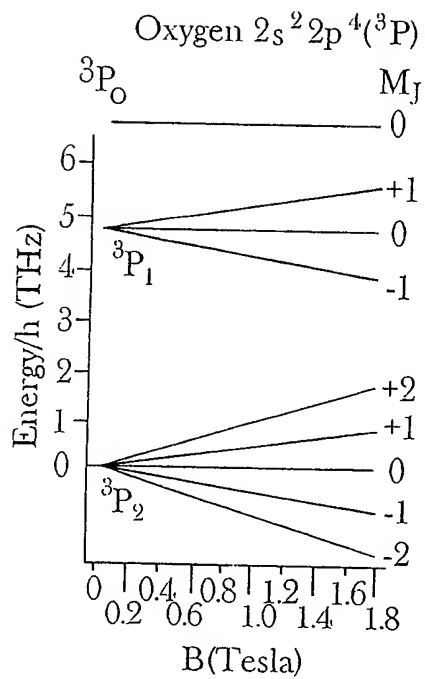


Fig. 63

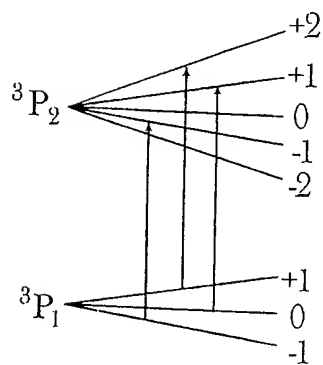


Fig. 64

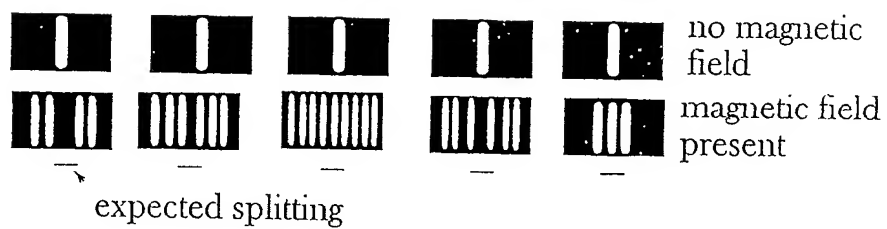
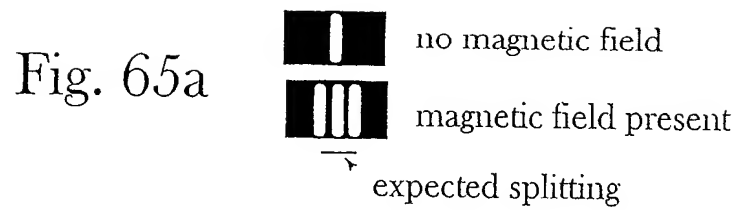


Fig. 65b

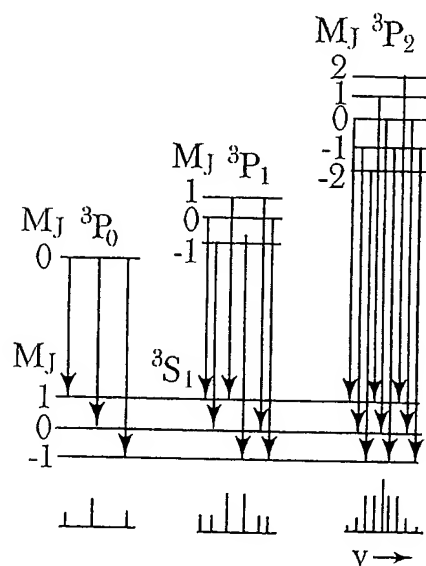


Fig. 66

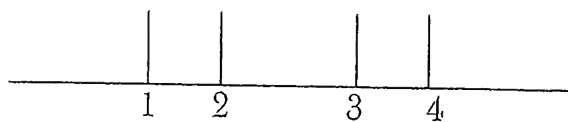


Fig. 67a

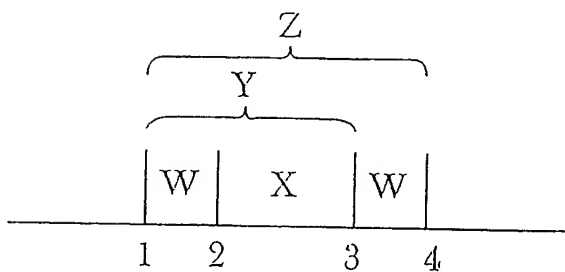


Fig. 67b

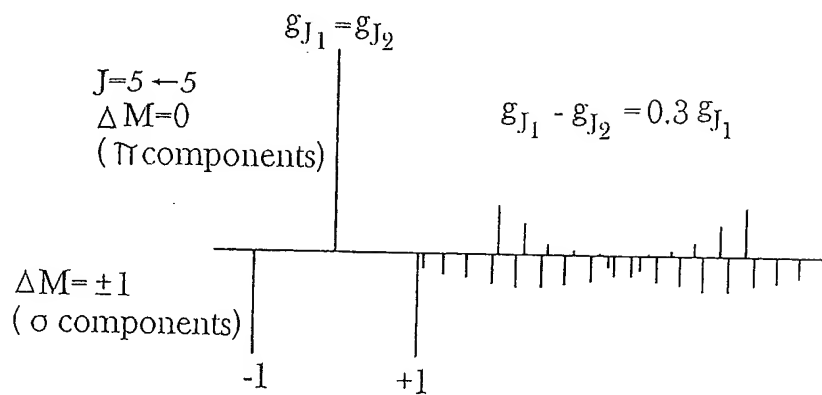
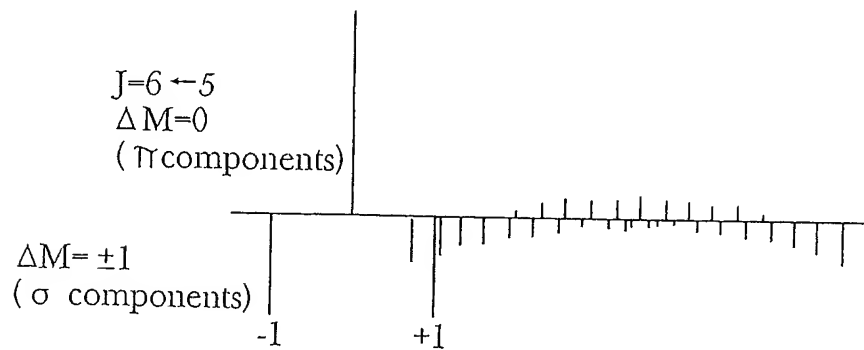


Fig. 68



100	7.7144	10.786	15.732	24.2382	40.1985	64.4367	74.0016	114.2	138.428	159.881	233.882	274.081	298.319	314.051	456.811
364.501	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
421.428	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
438.127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
443.127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
443.479	0	0	0	0	0	0	5.99283	0	0	0	0	0	0	0	0
449.757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
459.561	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
473.862	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00602
474.478	0	43.9902	0	0	0	0	0	0	0	0	0	0	0	0	0
497.495	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
512.918	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
513.333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
520.151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547.216	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547.489	0	0	0	0	0	0	0	0	0	0	0	1.99655	0	0	0
556.12	0	0	0	0	0	0	0	0	0	0	0	1.99754	0	0	0
558.318	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
565.537	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
573.474	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
592.536	0	0	0	0	0	0	8.00707	0	0	0	0	0	0	0	0
594.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
614.388	0	0	0	0	0	0	0	0	0	0	0	0	1.99233	0	0
658.534	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
663.126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
666.389	0	0	0	0	0	0	9.00506	0	0	0	0	0	0	0	0
674.365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
674.821	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
682.614	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
692.832	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
715.081	0	0	0	0	0	0	0	5.00464	0	0	0	0	0	0	0
719.866	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
727.883	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
750.124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
755.838	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
759.276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
764.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
768.555	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
785.066	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
808.823	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
810.27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
815.975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
816.431	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
818.412	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
822.889	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
823.88	0	0	0	0	0	0	0	0	0	0	0	3.00236	0	0	0
826.385	0	0	0	33.991	0	0	0	0	0	0	0	3.00597	0	0	0
860.17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
860.624	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
874.558	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
879.639	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
901.957	0	0	0	0	0	13.9976	0	0	0	0	0	0	0	0	0
904.338	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
907.95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911.162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
913.453	0	0	0	0	0	0	0	7.99871	0	0	0	0	0	0	1.99461
917.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.99963
920.761	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.00792
921.877	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
922.336	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
927.168	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
928.067	0	0	58.9923	0	0	0	0	0	0	0	0	0	0	0	0
935.67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
936.644	0	0	0	0	0	0	0	0	0	4.00061	0	0	0	0	0
949.744	0	0	0	0	0	0	0	0	0	4.00477	0	0	0	0	0
954.939	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967.06	0	0	0	0	0	15.0079	0	0	0	0	0	0	0	0	0
975.906	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
978.208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
985.304	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
987.312	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
993.388	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
998.553	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
999.995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1012.56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1013.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1018.06	0	0	0	42.0023	0	0	0	0	0	0	0	0	0	0	0

Fig. 69a

100	77144	10786	15732	242382	401985	644367	740016	1142	138428	159881	233882	274081	298319	314061	456811
101875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102326	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10262	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102692	0	0	0	0	0	0	0	8.99229	0	0	0	0	0	0	0
102896	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102942	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
103167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
103453	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
103596	0	0	0	0	0	0	13.9992	0	0	0	0	0	0	0	0
103619	0	0	0	0	0	0	14.0023	0	0	0	0	0	0	0	0
103799	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105076	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105758	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105923	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106744	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106945	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
107327	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108072	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108821	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108863	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10911	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109474	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109655	0	0	0	0	0	0	0	0	0	0	0	3.99422	0	0	0
109817	0	0	0	0	0	0	0	0	0	0	0	4.00082	0	0	0
110257	0	0	0	0	0	0	0	0	0	0	0	4.00674	0	0	0
110497	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110793	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110936	0	0	0	0	0	0	14.991	0	8.00308	0	0	0	0	0	0
111099	0	103.003	0	0	0	0	0	0	0	0	0	0	0	0	0
111982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11209	0	0	0	0	0	0	0	0	0	7.00408	0	0	0	0	0
112727	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112782	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113053	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113262	0	105.008	71.9947	0	0	0	0	0	0	0	0	0	0	0	0
113586	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114075	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114443	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115482	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117462	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117591	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118066	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118182	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118523	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118763	0	0	0	48.9983	0	0	0	0	0	0	0	0	0	0	0
119174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1192	0	0	0	0	0	0	0	0	0	0	0	3.99485	0	0	0
119246	0	0	0	0	0	0	0	0	0	0	0	3.99572	0	0	0
119511	0	0	0	0	0	0	0	0	0	0	0	3.99726	0	0	0
119633	0	0	0	0	0	0	0	0	0	0	0	4.00615	0	0	0
119989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120393	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120536	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121324	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121499	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122863	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123033	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123417	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123463	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123471	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124753	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124816	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125113	0	115.9960	0	0	0	0	0	0	0	0	0	0	0	0	0
125461	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125604	0	0	0	0	0	0	0	10.9986	0	0	0	0	3.99492	0	0
125771	0	0	0	0	0	0	16.9957	0	0	0	0	0	3.99948	0	0
126587	0	0	0	0	0	0	0	0	0	0	0	0	4.0048	0	0
127187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fig. 69b

100	7.7144	10.786	15.732	24.2382	40.1985	64.4367	74.0016	114.2	138.438	159.881	233.882	274.001	298.319	314.051	456.811
1281.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1288.82	0	0	0	0	0	20.0013	0	0	0	0	0	0	0	0	0
1293.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1294.72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1298.91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1307.77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1309.56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1318.13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1321.35	0	0	83.9912	0	0	0	0	0	0	0	0	0	0	0	0
1332.83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1348.83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1361.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1378.57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1384.61	0	0	0	0	0	0	0	0	10.0017	0	0	0	0	0	0
1398.14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1408.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1425.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1438.14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1450.02	0	0	0	0	0	0	0	0	0	8.99507	0	0	0	0	0
1462.85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1475.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1476.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fig. 69c

100	456.816	616.689	690.691	730.891	755.131	770.863	781.649	2466	2923	3083	3157	3197	3221	32367
364.501	0	0	0	0	0	0	0	0	0	0	0	0	0	0
421.428	0	0	0	0	0	0	0	0	0	0	0	0	0	0
438.127	0	0	0	0	0	0	0	0	0	0	0	0	0	0
443.127	0	0	0	0	0	0	0	0	0	0	0	0	0	0
443.479	0	0	0	0	0	0	0	0	0	0	0	0	0	0
449.757	0	0	0	0	0	0	0	0	0	0	0	0	0	0
458.561	1.00601	0	0	0	0	0	0	0	0	0	0	0	0	0
473.862	0	0	0	0	0	0	0	0	0	0	0	0	0	0
474.478	0	0	0	0	0	0	0	0	0	0	0	0	0	0
497.495	0	0	0	0	0	0	0	0	0	0	0	0	0	0
512.918	0	0	0	0	0	0	0	0	0	0	0	0	0	0
513.333	0	0	0	0	0	0	0	0	0	0	0	0	0	0
520.151	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547.216	0	0	0	0	0	0	0	0	0	0	0	0	0	0
547.489	0	0	0	0	0	0	0	0	0	0	0	0	0	0
556.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
558.378	0	0	0	0	0	0	0	0	0	0	0	0	0	0
565.537	0	0	0	0	0	0	0	0	0	0	0	0	0	0
573.474	0	0	0	0	0	0	0	0	0	0	0	0	0	0
592.506	0	0	0	0	0	0	0	0	0	0	0	0	0	0
594.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0
614.388	0	0.99627	0	0	0	0	0	0	0	0	0	0	0	0
658.534	0	0	0	0	0	0	0	0	0	0	0	0	0	0
663.126	0	0	0	0	0	0	0	0	0	0	0	0	0	0
666.389	0	0	0	0	0	0	0	0	0	0	0	0	0	0
674.365	0	0	0	0	0	0	0	0	0	0	0	0	0	0
674.821	0	0	0	0	0	0	0	0	0	0	0	0	0	0
682.614	0	0	0	0	0	0	0	0	0	0	0	0	0	0
692.832	0	0	1.0031	0	0	0	0	0	0	0	0	0	0	0
715.081	0	0	0	0	0	0	0	0	0	0	0	0	0	0
719.886	0	0	0	0	0	0	0	0	0	0	0	0	0	0
727.883	0	0	0	0.99588	0	0	0	0	0	0	0	0	0	0
750.124	0	0	0	0	0.99337	0	0	0	0	0	0	0	0	0
755.838	0	0	0	0	1.00094	0	0	0	0	0	0	0	0	0
759.276	0	0	0	0	1.00549	0	0	0	0	0	0	0	0	0
764.2	0	0	0	0	0	0.99136	0	0	0	0	0	0	0	0
768.555	0	0	0	0	0	0.99701	0	0	0	0	0	0	0	0
785.056	0	0	0	0	0	0	1.00437	0	0	0	0	0	0	0
808.823	0	0	0	0	0	0	0	0	0	0	0	0	0	0
810.27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
815.975	0	0	0	0	0	0	0	0	0	0	0	0	0	0
816.431	0	0	0	0	0	0	0	0	0	0	0	0	0	0
818.412	0	0	0	0	0	0	0	0	0	0	0	0	0	0
822.889	0	0	0	0	0	0	0	0	0	0	0	0	0	0
823.88	0	0	0	0	0	0	0	0	0	0	0	0	0	0
826.305	0	0	0	0	0	0	0	0	0	0	0	0	0	0
868.17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
860.624	0	0	0	0	0	0	0	0	0	0	0	0	0	0
874.558	0	0	0	0	0	0	0	0	0	0	0	0	0	0
879.639	0	0	0	0	0	0	0	0	0	0	0	0	0	0
901.957	0	0	0	0	0	0	0	0	0	0	0	0	0	0
904.338	0	0	0	0	0	0	0	0	0	0	0	0	0	0
907.95	0	0	0	0	0	0	0	0	0	0	0	0	0	0
911.162	1.99459	0	0	0	0	0	0	0	0	0	0	0	0	0
913.453	1.99961	0	0	0	0	0	0	0	0	0	0	0	0	0
917.24	2.0079	0	0	0	0	0	0	0	0	0	0	0	0	0
920.761	0	0	0	0	0	0	0	0	0	0	0	0	0	0
921.877	0	0	0	0	0	0	0	0	0	0	0	0	0	0
922.336	0	0	0	0	0	0	0	0	0	0	0	0	0	0
927.168	0	0	0	0	0	0	0	0	0	0	0	0	0	0
928.067	0	0	0	0	0	0	0	0	0	0	0	0	0	0
935.67	0	0	0	0	0	0	0	0	0	0	0	0	0	0
936.644	0	0	0	0	0	0	0	0	0	0	0	0	0	0
949.744	0	0	0	0	0	0	0	0	0	0	0	0	0	0
954.939	0	0	0	0	0	0	0	0	0	0	0	0	0	0
967.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0
975.906	0	0	0	0	0	0	0	0	0	0	0	0	0	0
978.208	0	0	0	0	0	0	0	0	0	0	0	0	0	0
985.304	0	0	0	0	0	0	0	0	0	0	0	0	0	0
987.312	0	0	0	0	0	0	0	0	0	0	0	0	0	0
993.388	0	0	0	0	0	0	0	0	0	0	0	0	0	0
998.553	0	0	0	0	0	0	0	0	0	0	0	0	0	0
999.985	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1012.56	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1013.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1018.76	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fig. 69d

700	456 816	616 688	690 691	730 891	755 131	770 863	781 649	2466	2923	3083	3157	3197	3221	3236.7
1018.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1023.26	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1026.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1026.92	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1028.95	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1029.42	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1031.67	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1034.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1035.96	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1036.19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1037.99	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1050.76	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1057.58	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1059.23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1063.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1067.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1069.45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1073.27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1080.72	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1081.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1081.63	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1082.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1086.21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1089.63	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1091.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1094.74	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1096.55	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1098.17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1102.57	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1104.97	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1107.93	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1109.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1110.99	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1119.82	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1120.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1127.27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1127.82	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1130.93	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1132.62	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1135.86	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1140.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1144.43	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1151.66	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1154.82	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1174.62	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1175.91	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1180.66	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1181.92	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1185.23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1187.63	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1191.74	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1192	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1192.46	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1195.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1196.33	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1199.89	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1201.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1203.93	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1205.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1213.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1214.99	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1223.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1228.63	0	1.9923	0	0	0	0	0	0	0	0	0	0	0	0
1230.33	0	1.99506	0	0	0	0	0	0	0	0	0	0	0	0
1234.17	0	2.00129	0	0	0	0	0	0	0	0	0	0	0	0
1234.63	0	2.00203	0	0	0	0	0	0	0	0	0	0	0	0
1234.71	0	2.00216	0	0	0	0	0	0	0	0	0	0	0	0
1239.81	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1247.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1248.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1251.13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1254.61	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1256.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1257.71	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1265.87	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1271.87	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fig. 69e

100	456816	616688	690691	730891	755131	770863	781649	2466	2923	3083	3157	3197	3221	32367
128107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128882	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129316	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129472	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129891	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130777	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130956	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131813	0	0	0	0	0	0	0	0	0	0	0	0	0	0
132135	0	0	0	0	0	0	0	0	0	0	0	0	0	0
133283	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134883	0	0	0	0	0	0	0	0	0	0	0	0	0	0
136132	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137857	0	0	199593	0	0	0	0	0	0	0	0	0	0	0
138461	0	0	200467	0	0	0	0	0	0	0	0	0	0	0
139814	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140804	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142532	0	0	0	0	0	0	0	0	0	0	0	0	0	0
143814	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145002	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146285	0	0	0	200146	0	0	0	0	0	0	0	0	0	0
147506	0	0	0	0	0	0	0	0	0	0	0	0	0	0
147635	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fig. 69f

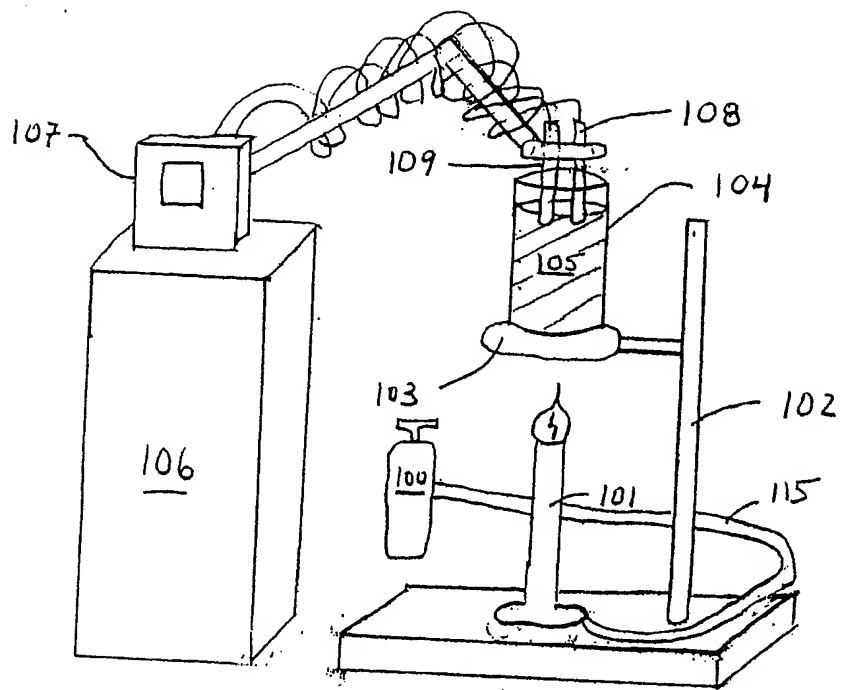


FIG. 70

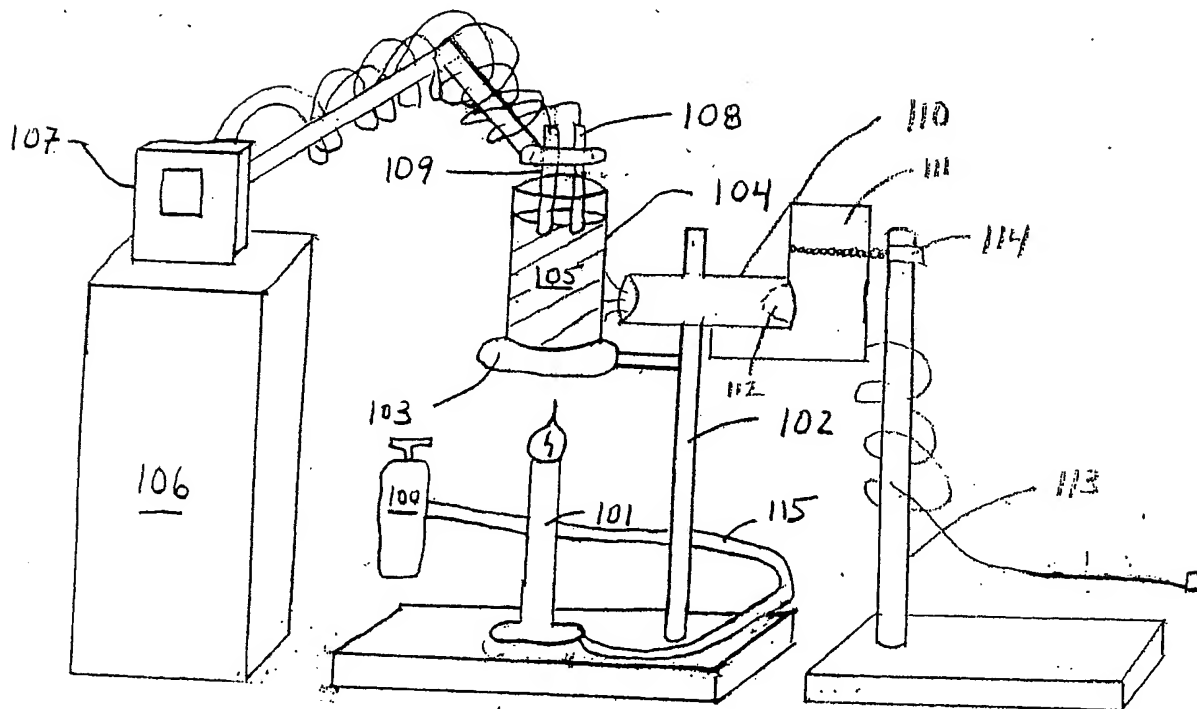
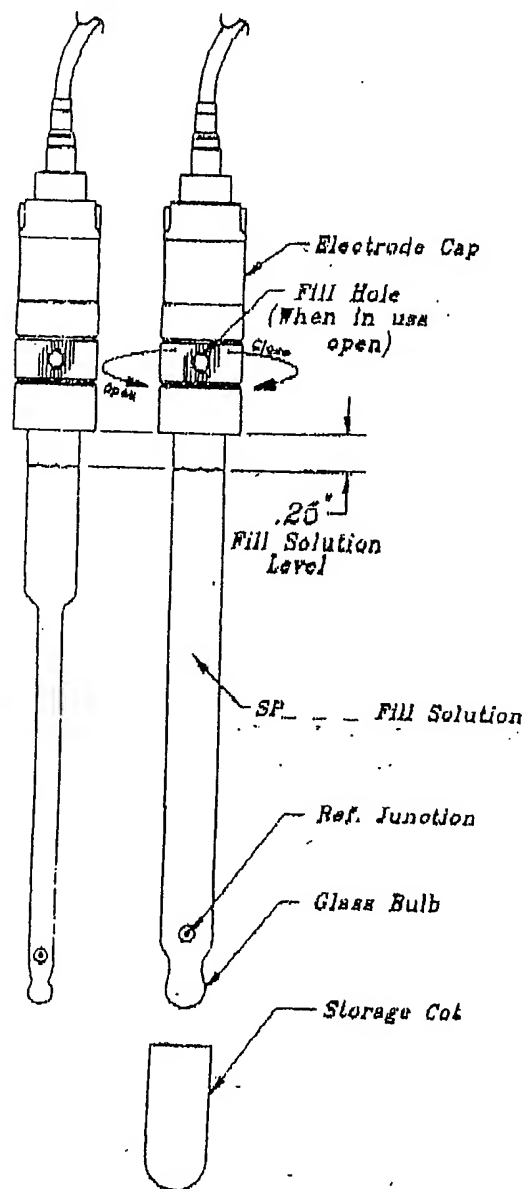
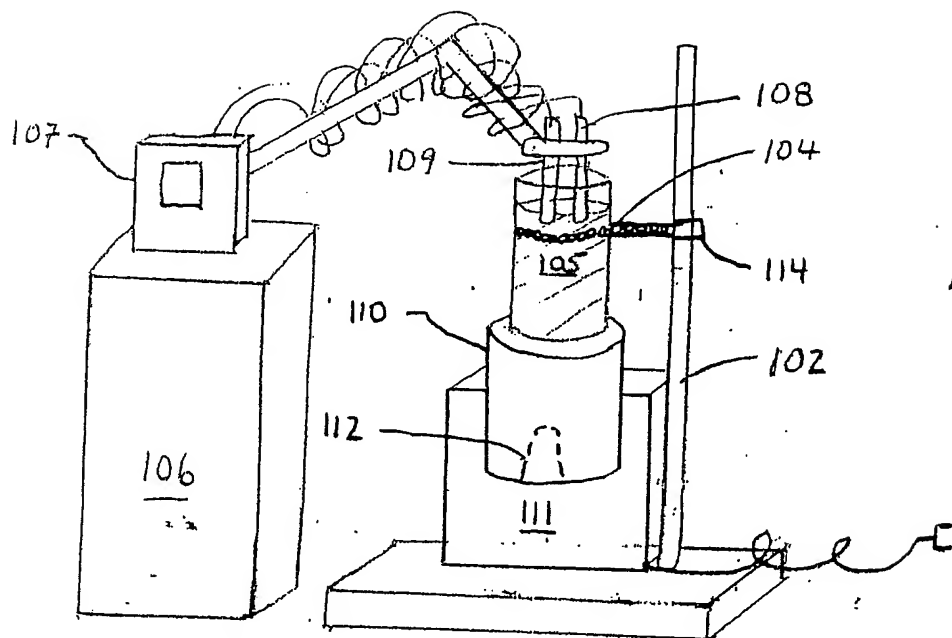


FIG. 71



Bunsen Burner Only

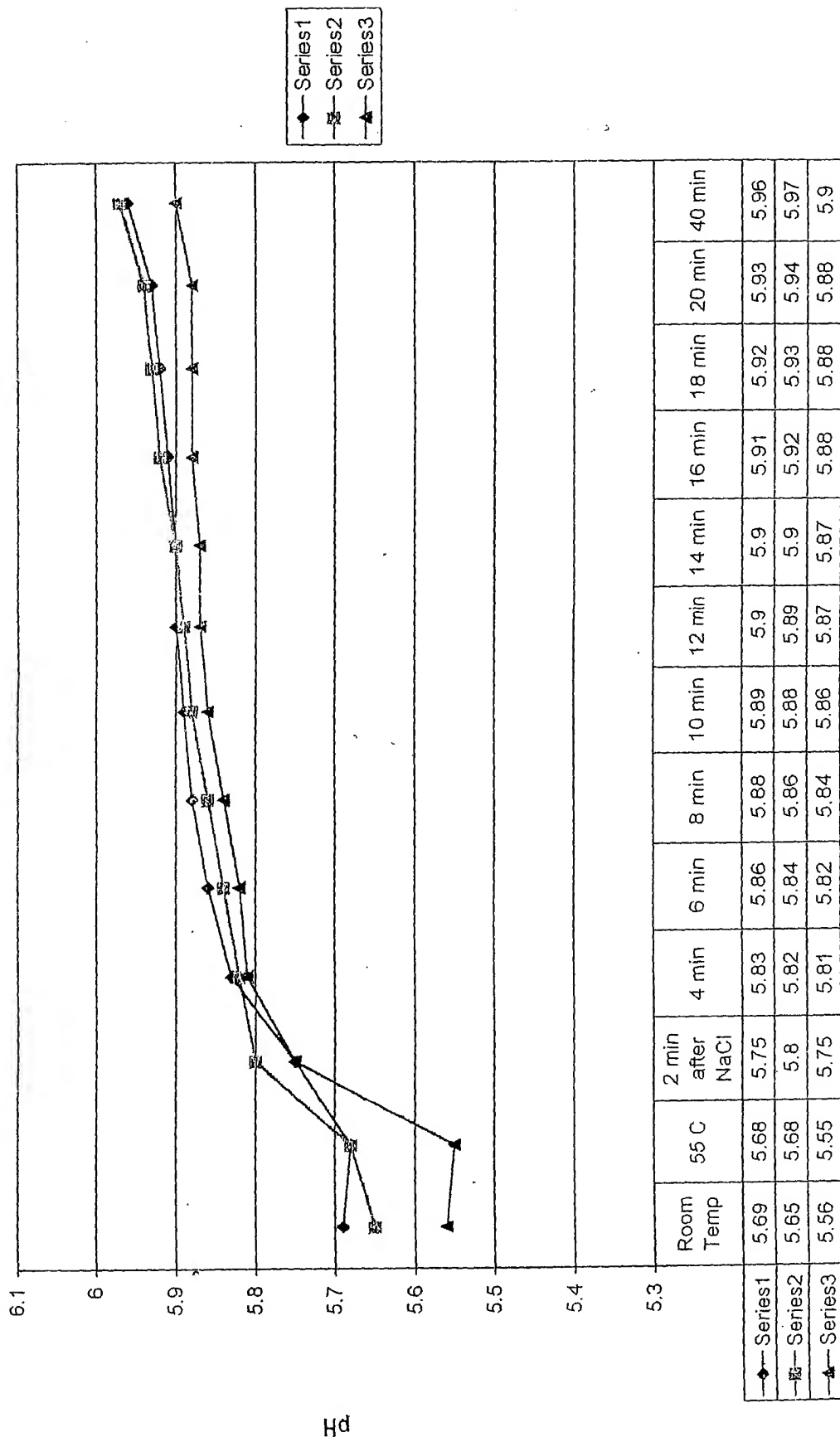


FIG. 74a

Bunsen Burner and Na Lamp

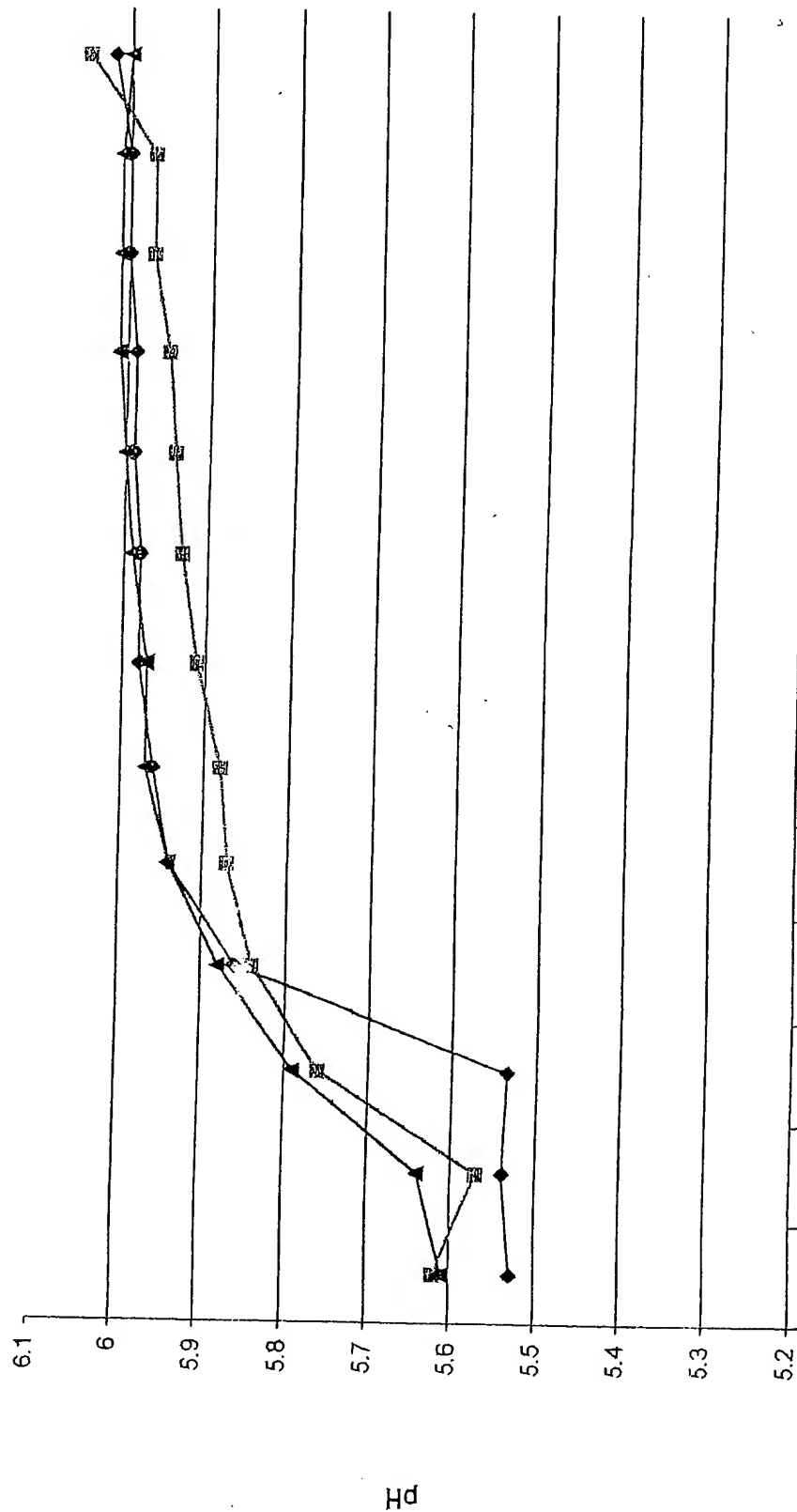


FIG. 74 b

Na Lamp Only

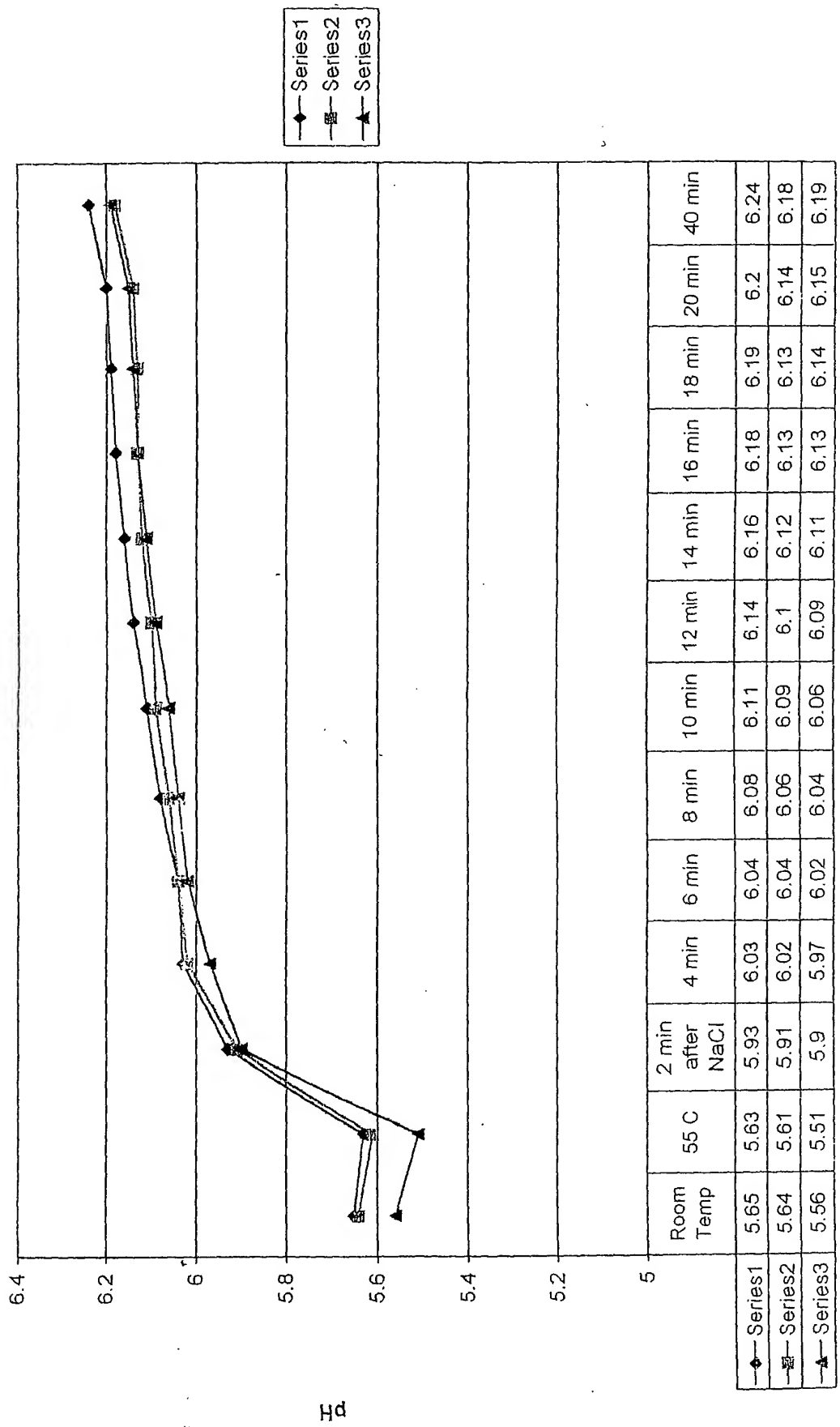
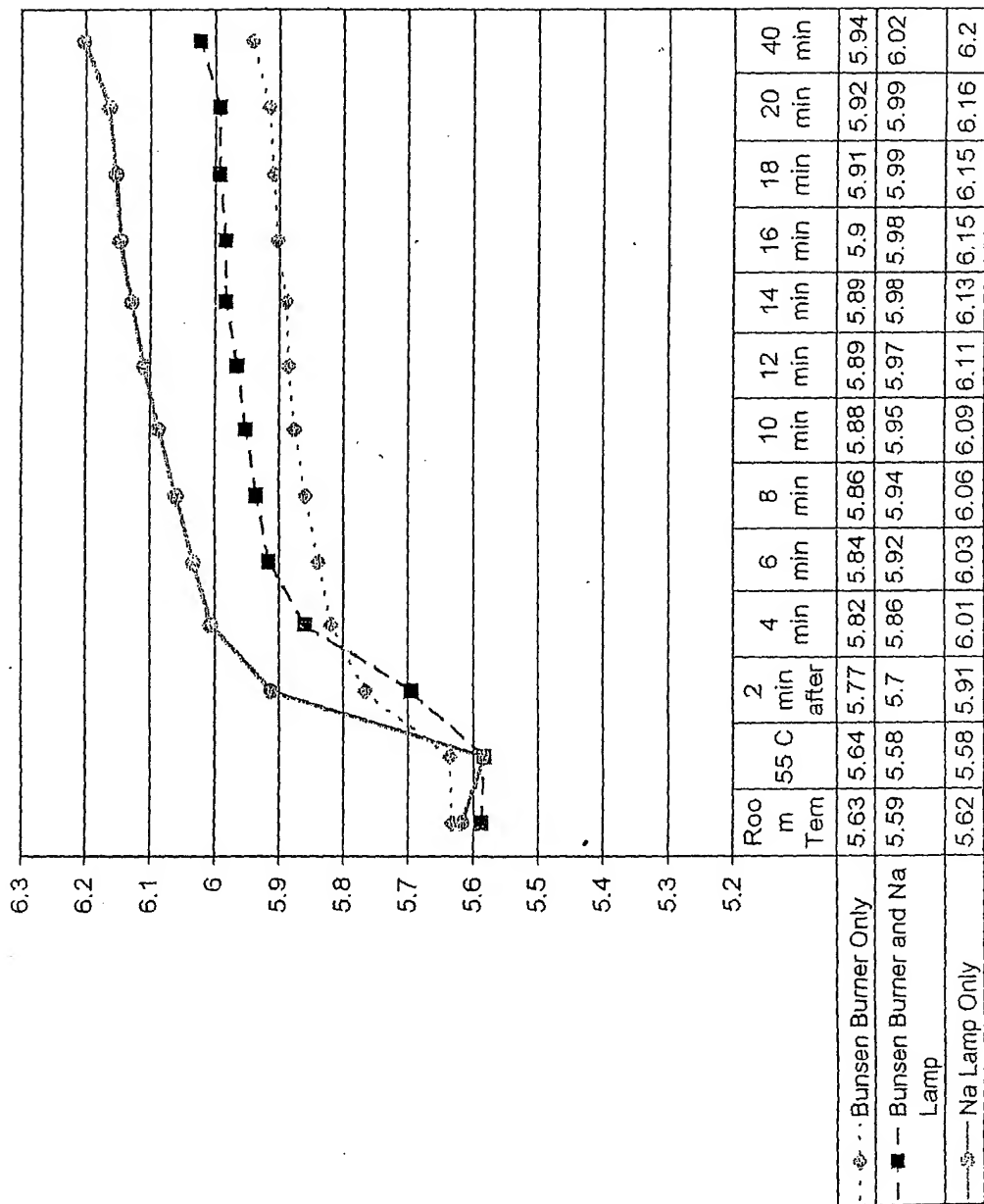


FIG. 74C

Averages of 3 Different Experimental Conditions



Fig

Fig. 74d

Na Lamp - Conditioning and After NaCl

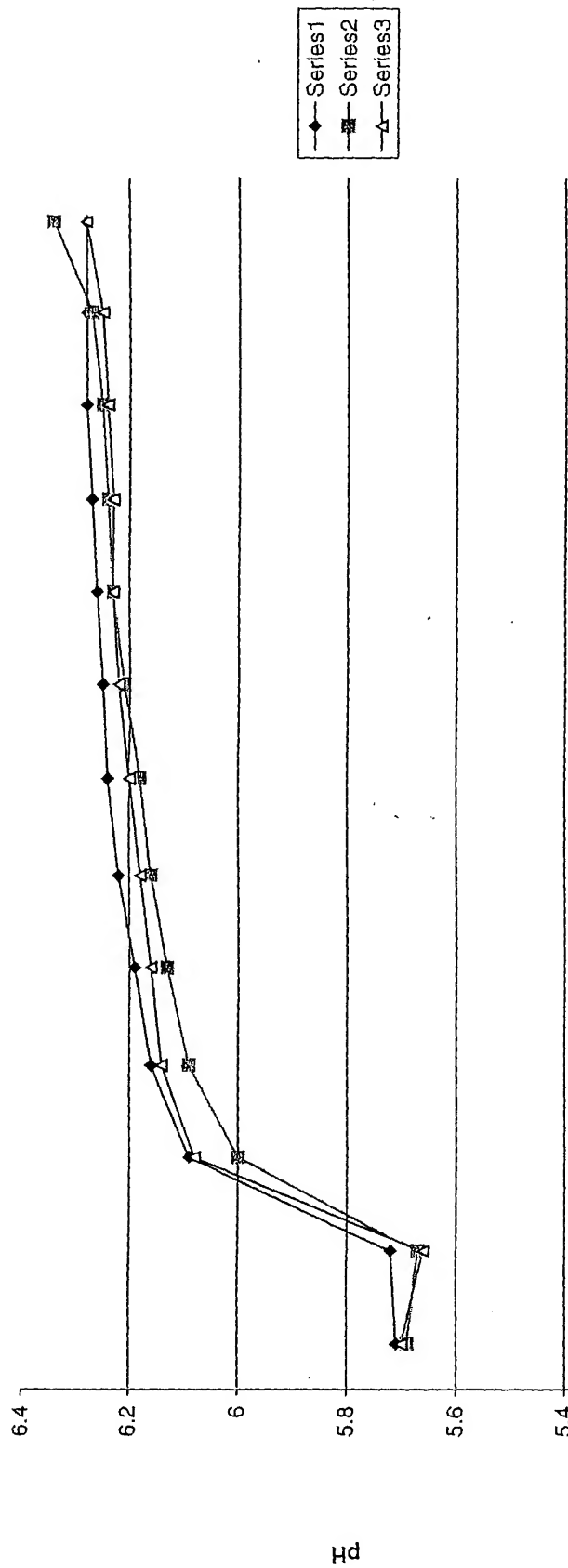


FIG. 74e

Na Lamp Conditioning of Water

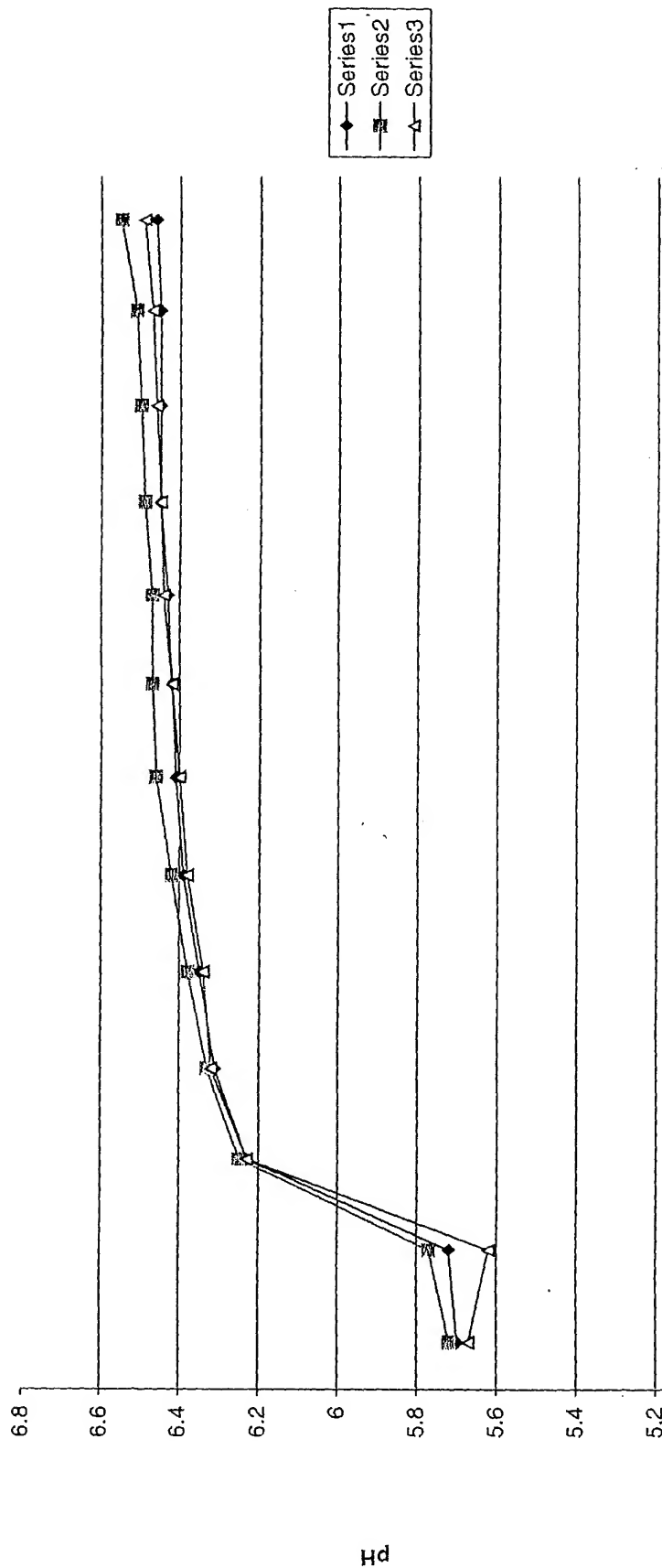


FIG. 74f

Averages of 3 Different Experimental Conditions

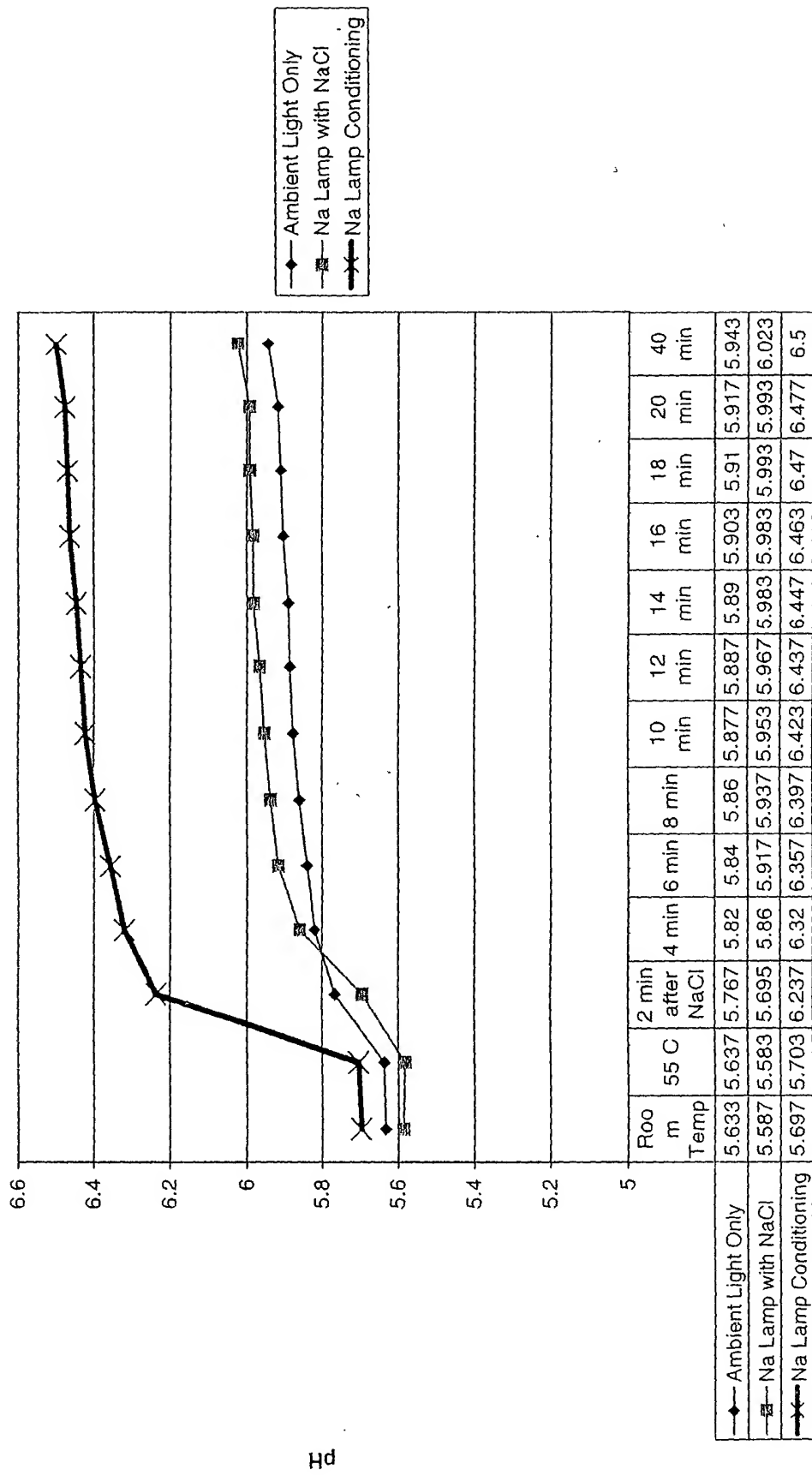
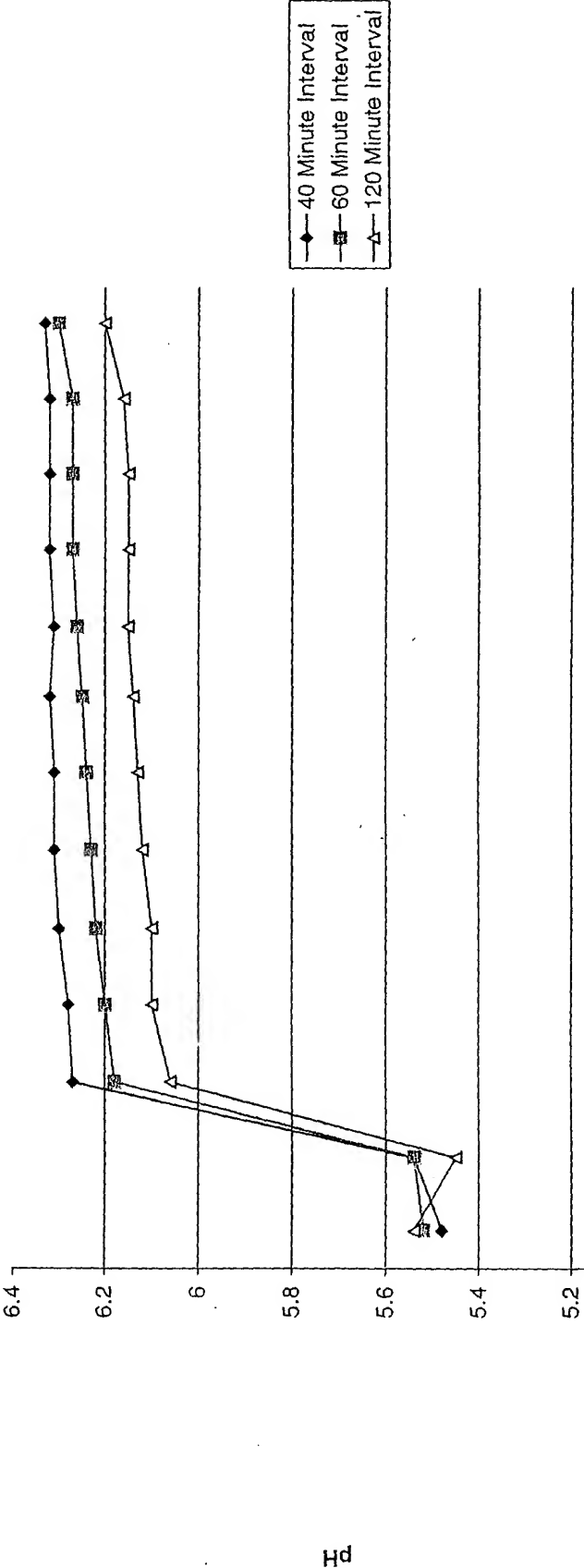


FIG. 74g

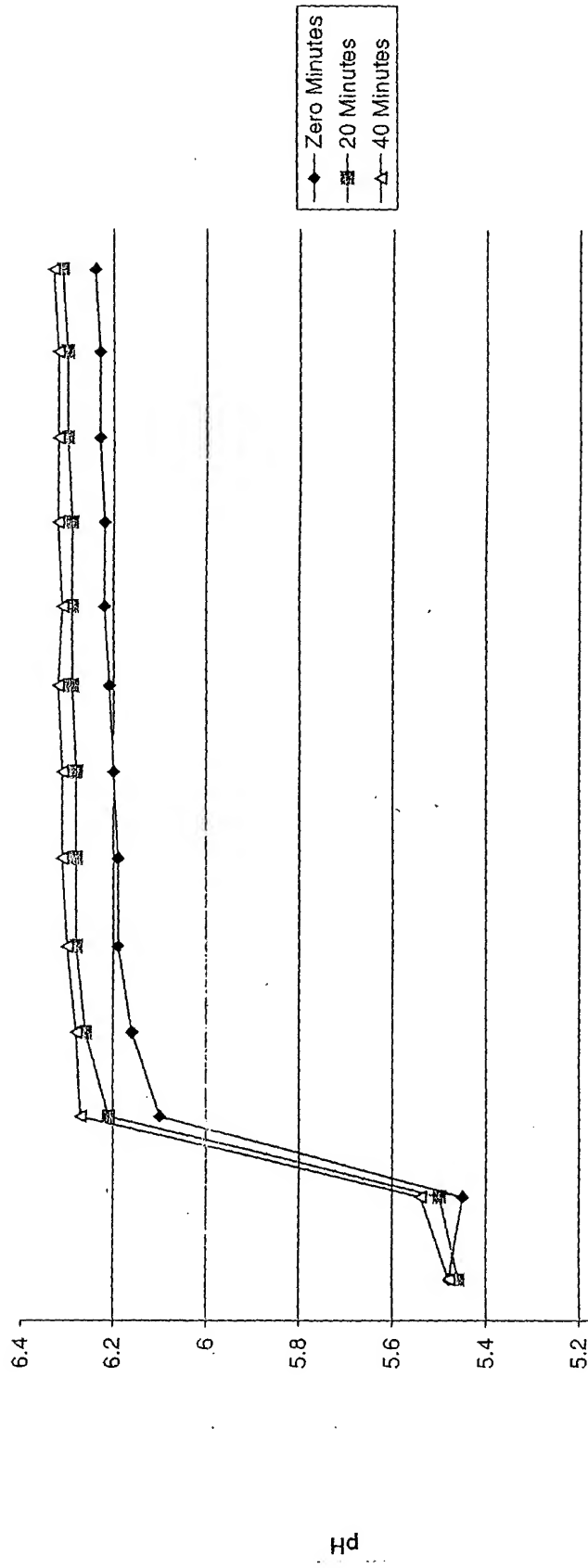
Decay Curves for Na Lamp Conditioning of Water



	Room Temp	After Na Lamp	2 min after NaCl	4 min	6 min	8 min	10 min	12 min	14 min	16 min	18 min	20 min	40 min
40 Minute Interval	5.48	5.54	6.27	6.28	6.3	6.31	6.31	6.32	6.31	6.32	6.32	6.32	6.33
60 Minute Interval	5.52	5.54	6.18	6.2	6.22	6.23	6.24	6.25	6.26	6.27	6.27	6.27	6.3
120 Minute Interval	5.54	5.45	6.06	6.1	6.1	6.12	6.13	6.14	6.15	6.15	6.15	6.16	6.2

Fig. 74 h

Activation Curves for Na Lamp Conditioning in Water



	Room Temp	After Na Lamp	2 min after NaCl	4 min	6 min	8 min	10 min	12 min	14 min	16 min	18 min	20 min	40 min
Zero Minutes	5.48	5.45	6.1	6.16	6.19	6.19	6.2	6.21	6.22	6.22	6.23	6.23	6.24
20 Minutes	5.46	5.5	6.21	6.26	6.28	6.28	6.28	6.29	6.29	6.29	6.3	6.3	6.31
40 Minutes	5.48	5.54	6.27	6.28	6.3	6.31	6.31	6.32	6.31	6.32	6.32	6.32	6.33

Fig. 74c

Spectrally Irradiated Solute (Sodium Chloride)

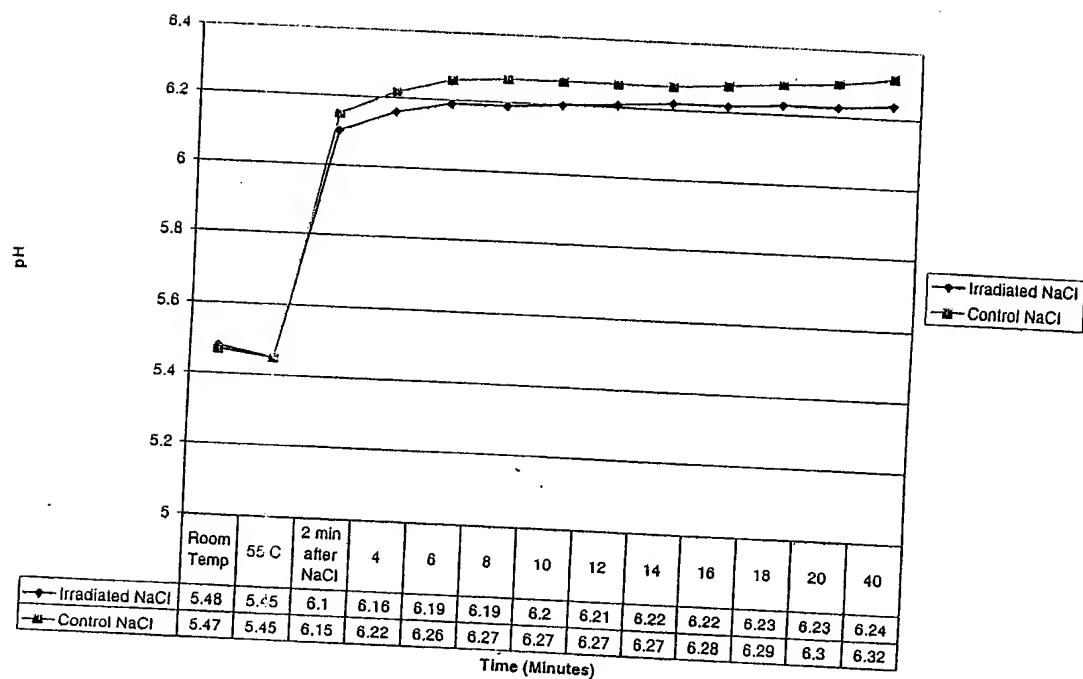


FIG. 74j

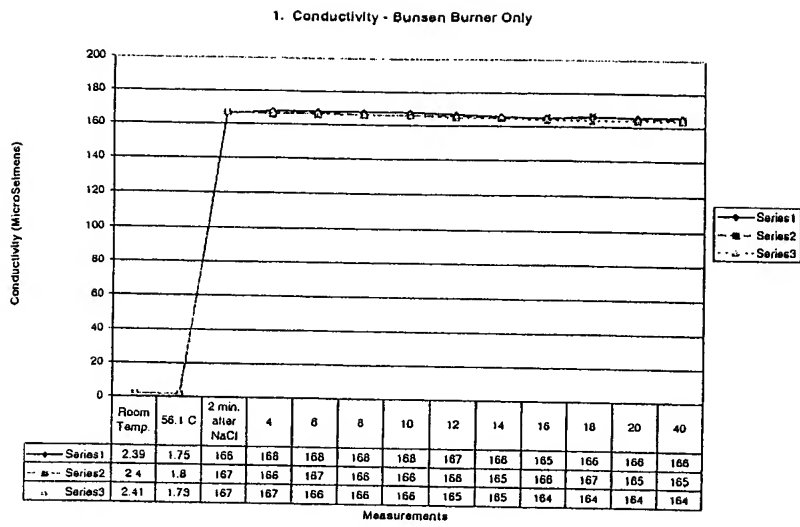


FIG. 75a

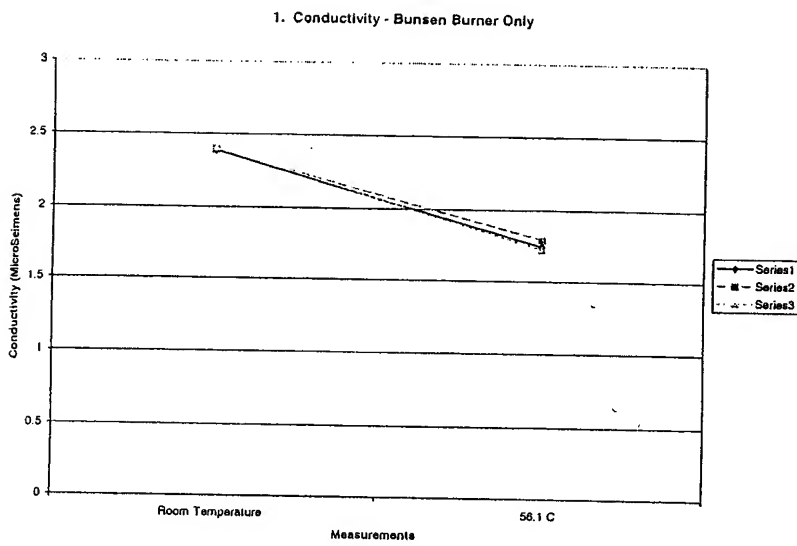
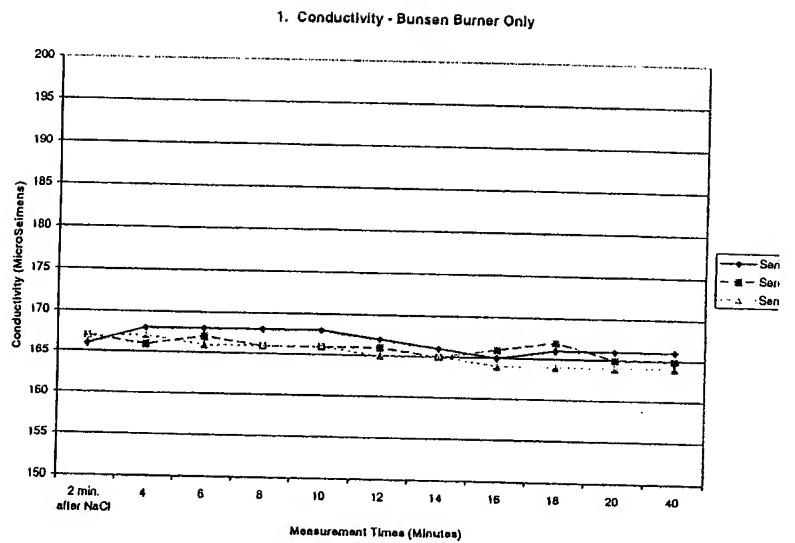
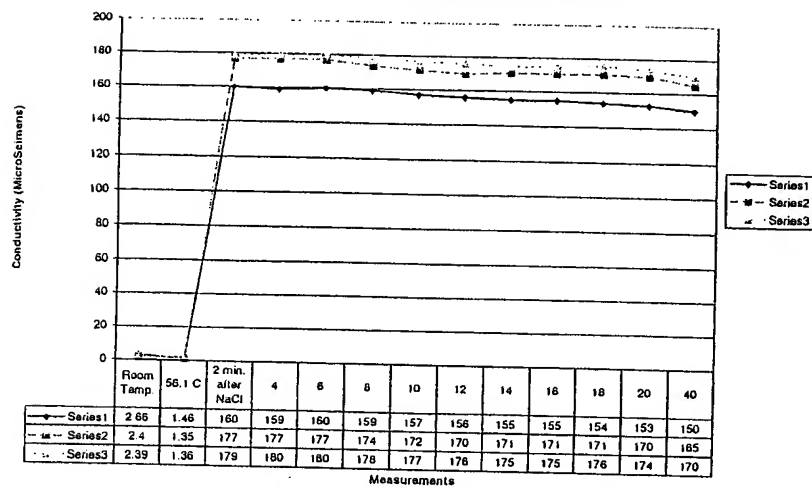


FIG. 75b

FIG. 75c

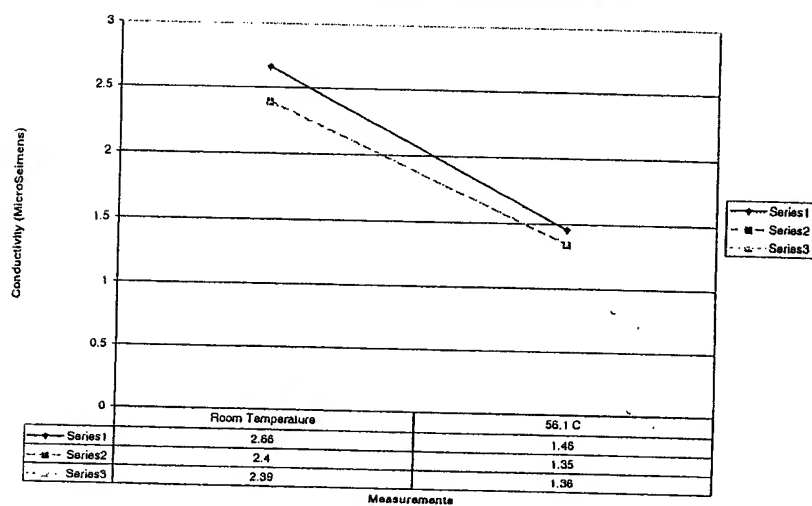


2. Conductivity - Sodium Irradiation 40 Minutes Before the Salt



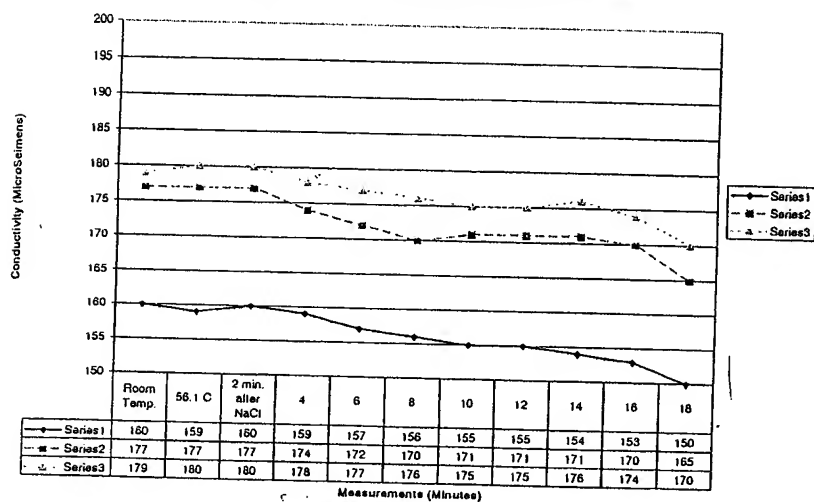
F16. 75 d

2. Conductivity - Sodium Irradiation 40 Minutes Before the Salt



F16. 75 e

2. Conductivity - Sodium Irradiation 40 Minutes Before the Salt



F16. 75 f

3. Conductivity - Sodium Irradiation 40 Minutes After the Salt

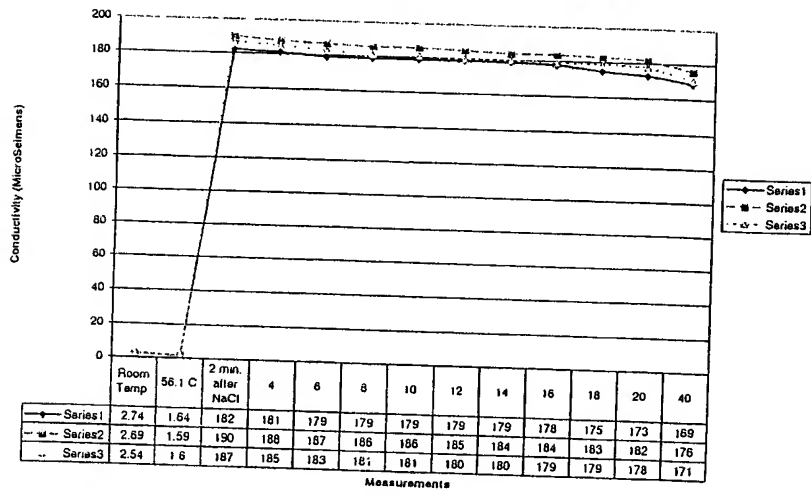


FIG. 758

3. Conductivity - Sodium Irradiation 40 Minutes After the Salt

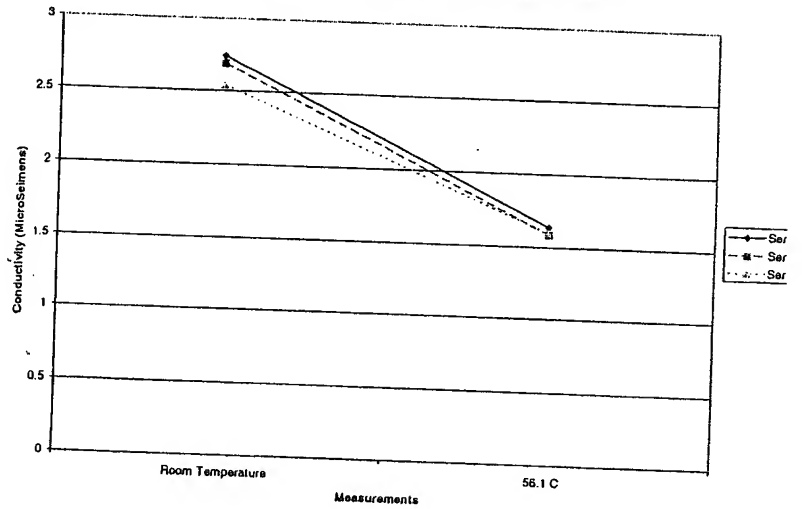


FIG. 75 h

3. Conductivity - Sodium Irradiation 40 Minutes After the Salt

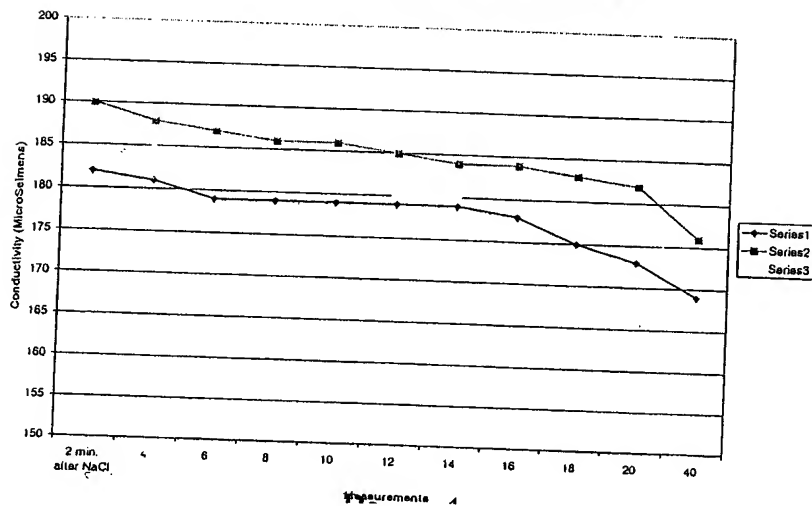


FIG 75i

4. Conductivity - Sodium Irradiation Before and After the Salt

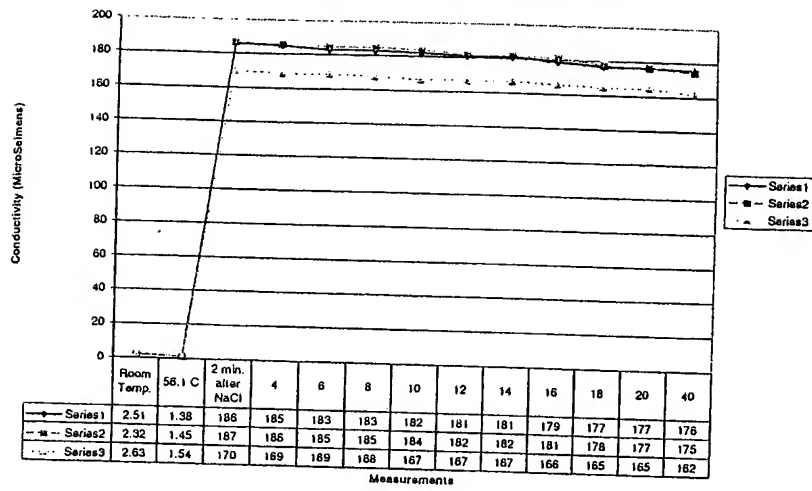


FIG. 75j

4. Conductivity - Sodium Irradiation Before and After the Salt

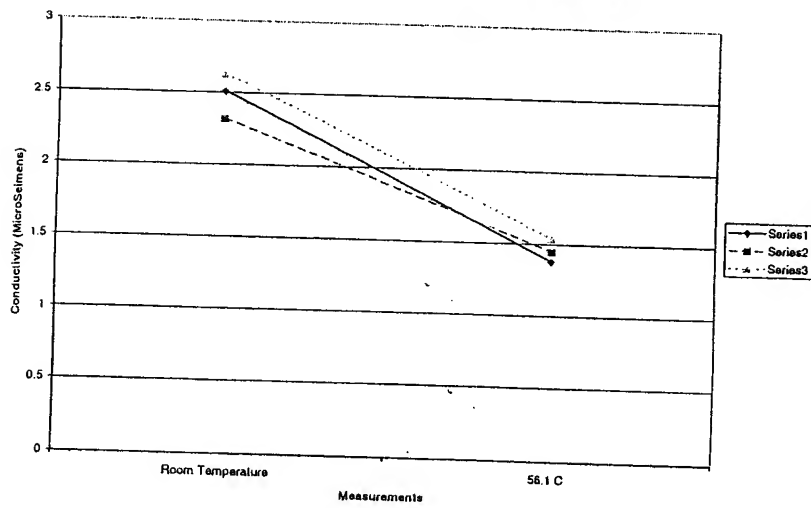


FIG. 75k

4. Conductivity - Sodium Irradiation 40 Minutes Before and After the Salt

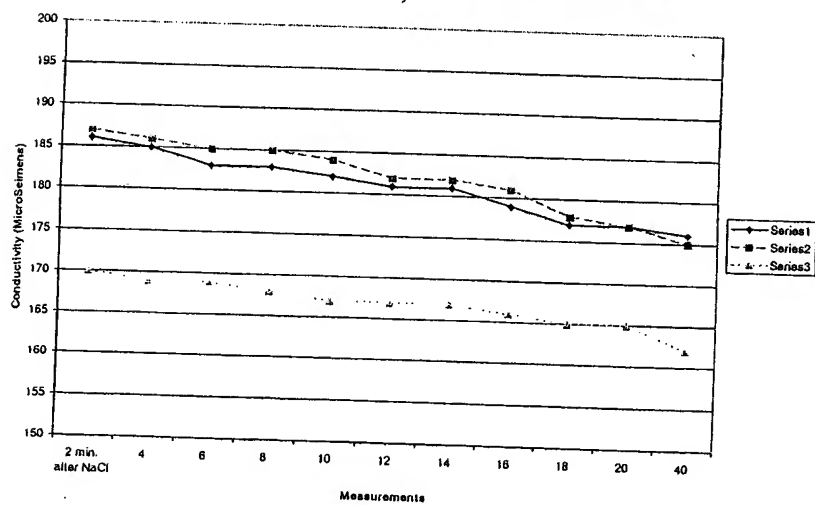
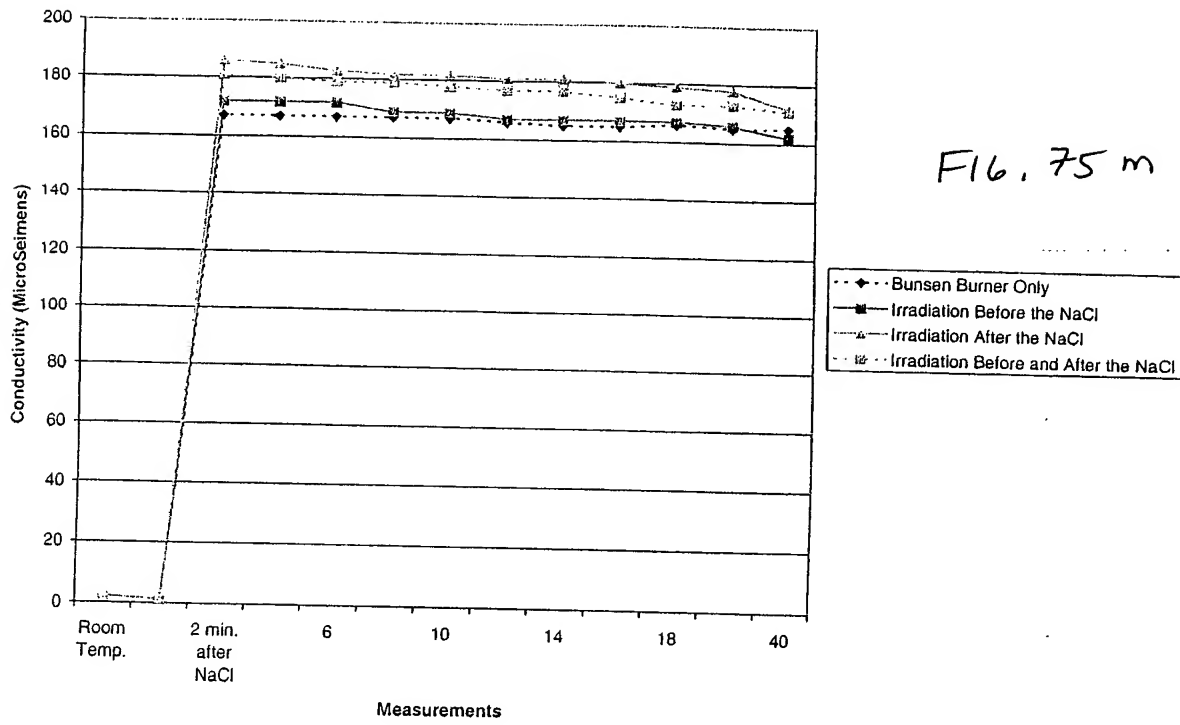
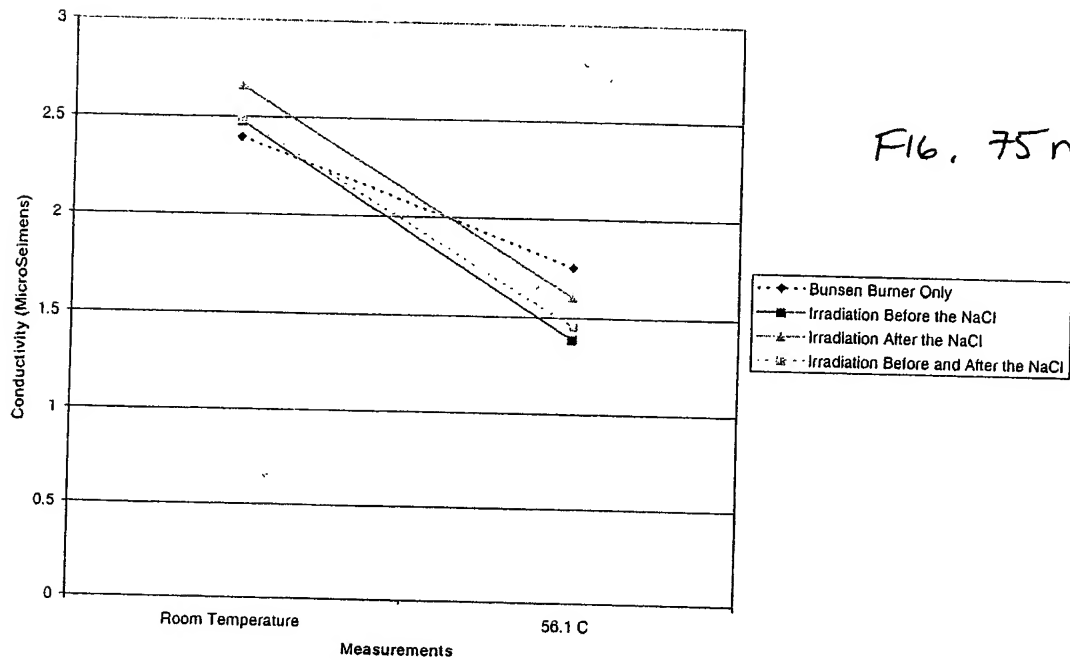


FIG. 75l

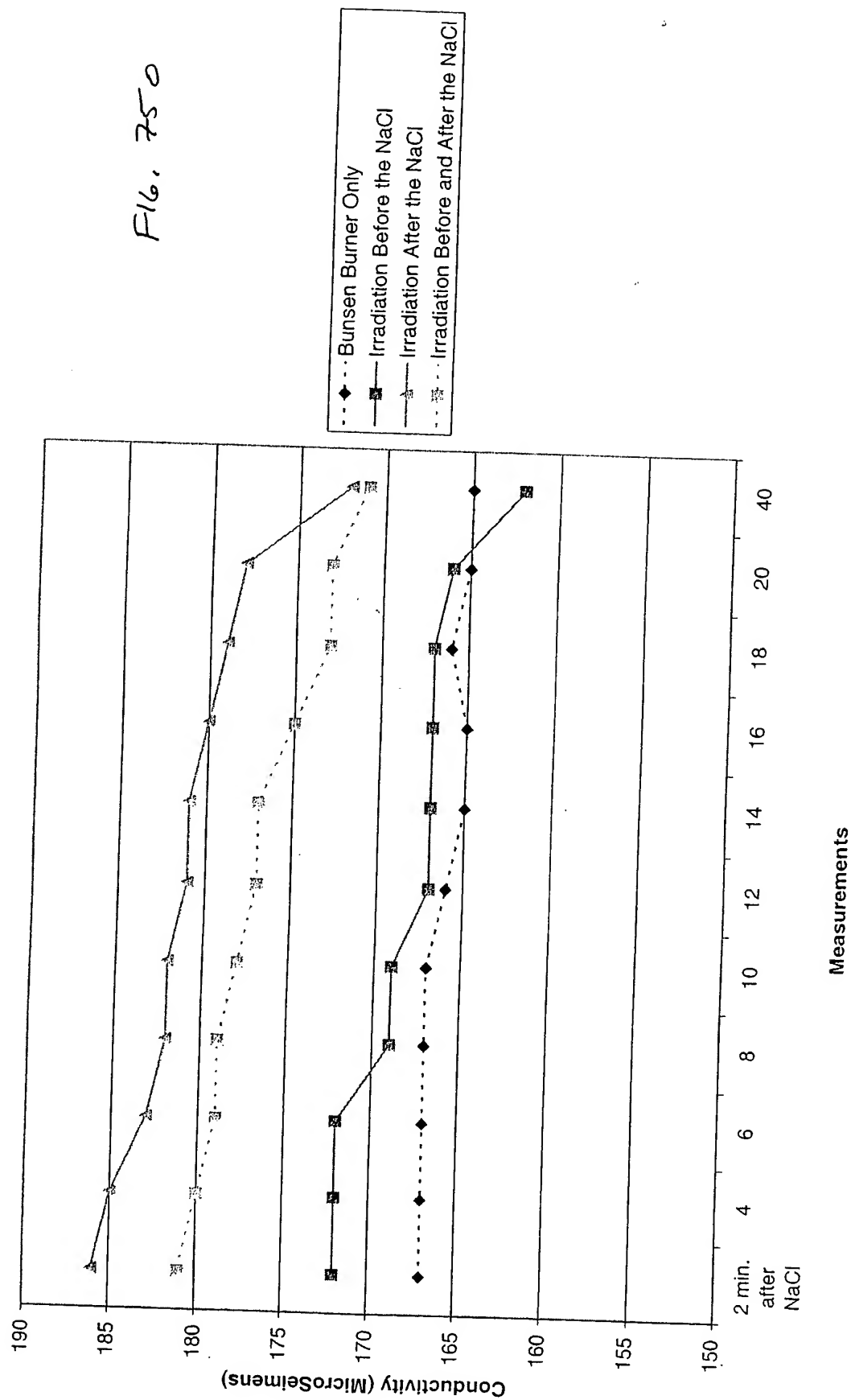
Conductivity - Averages of 4 Different Experimental Conditions

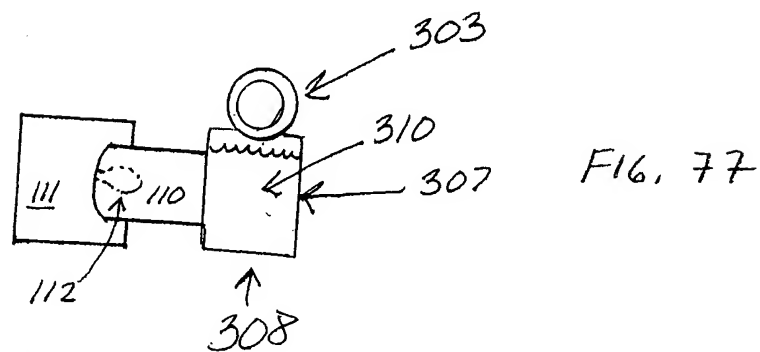
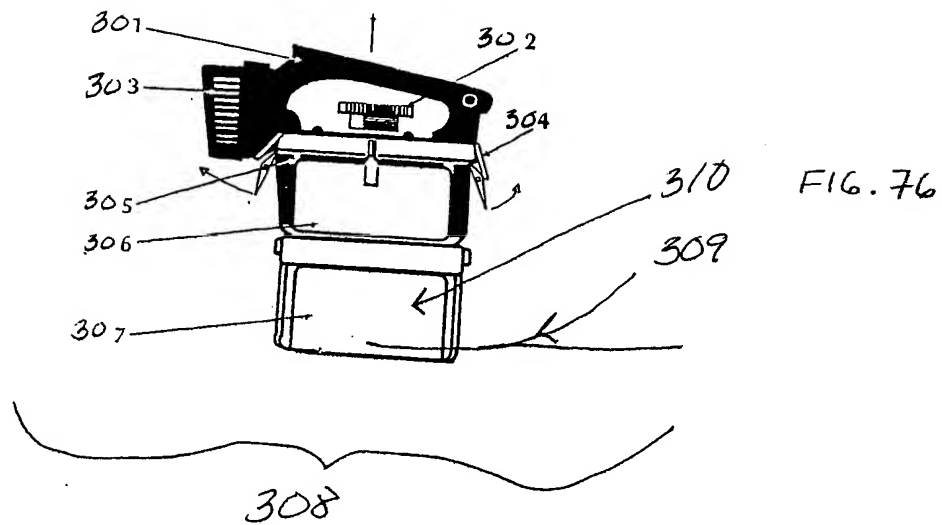


Conductivity - Averages of 4 Different Experimental Conditions

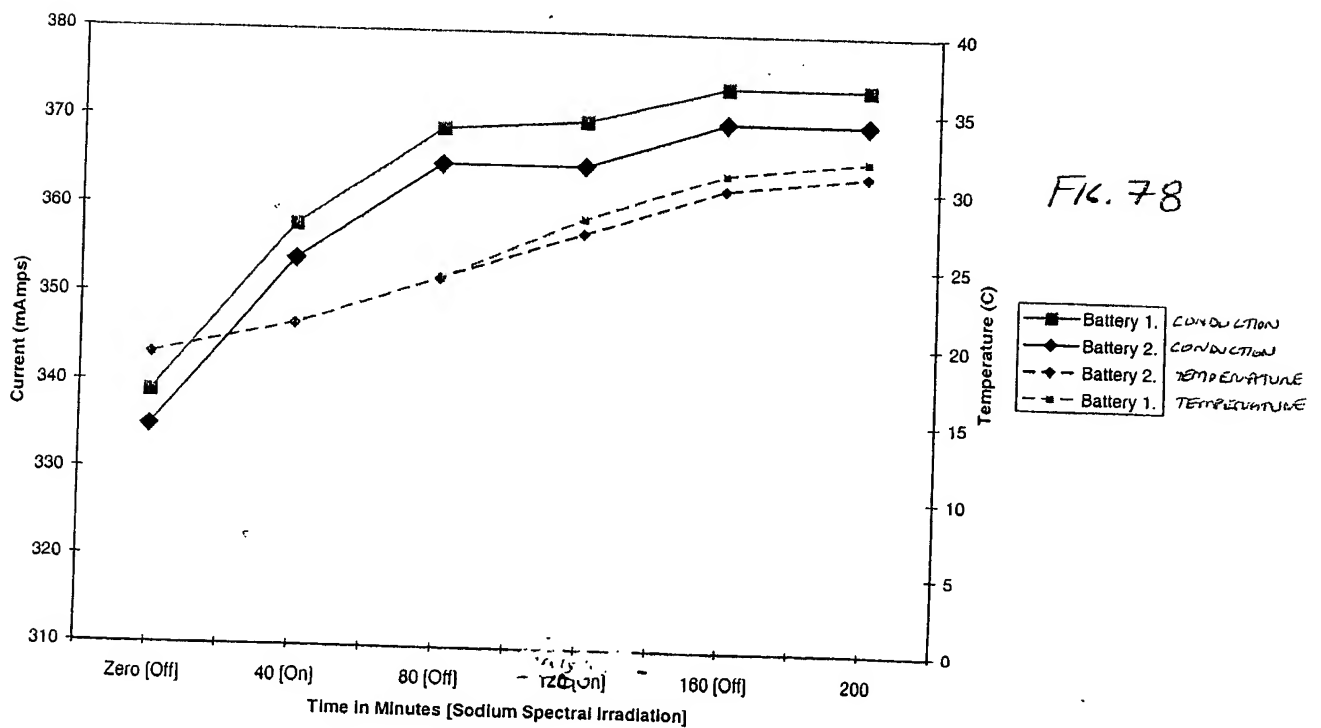


Conductivity - Averages of 4 Different Experimental Conditions

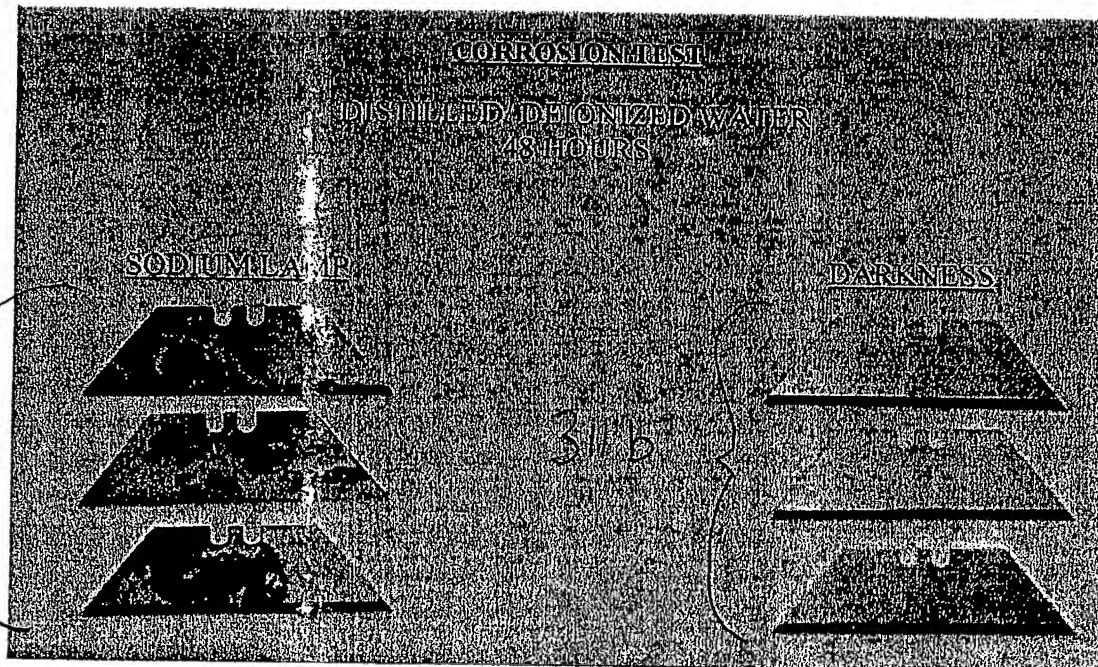
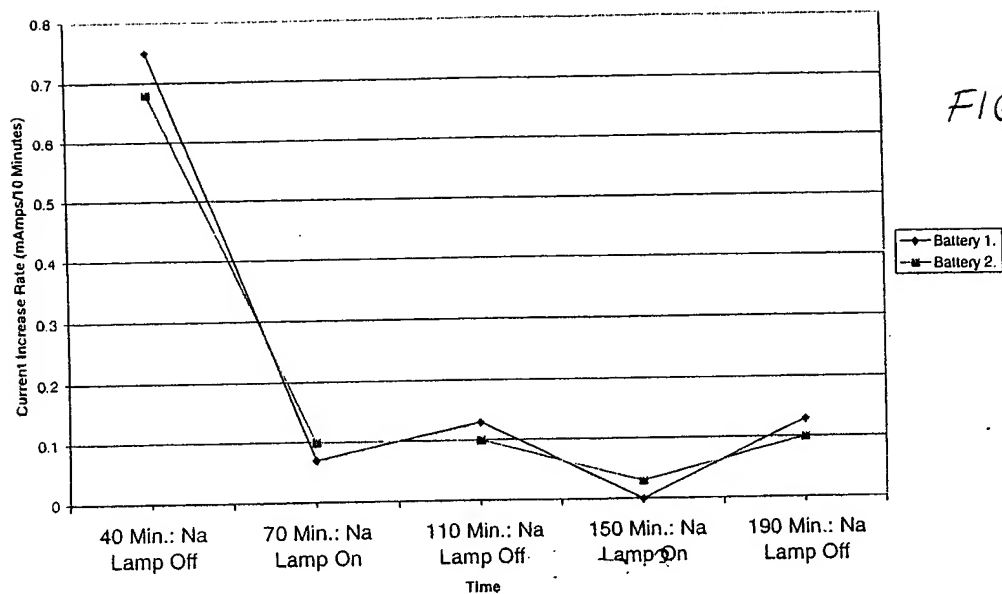




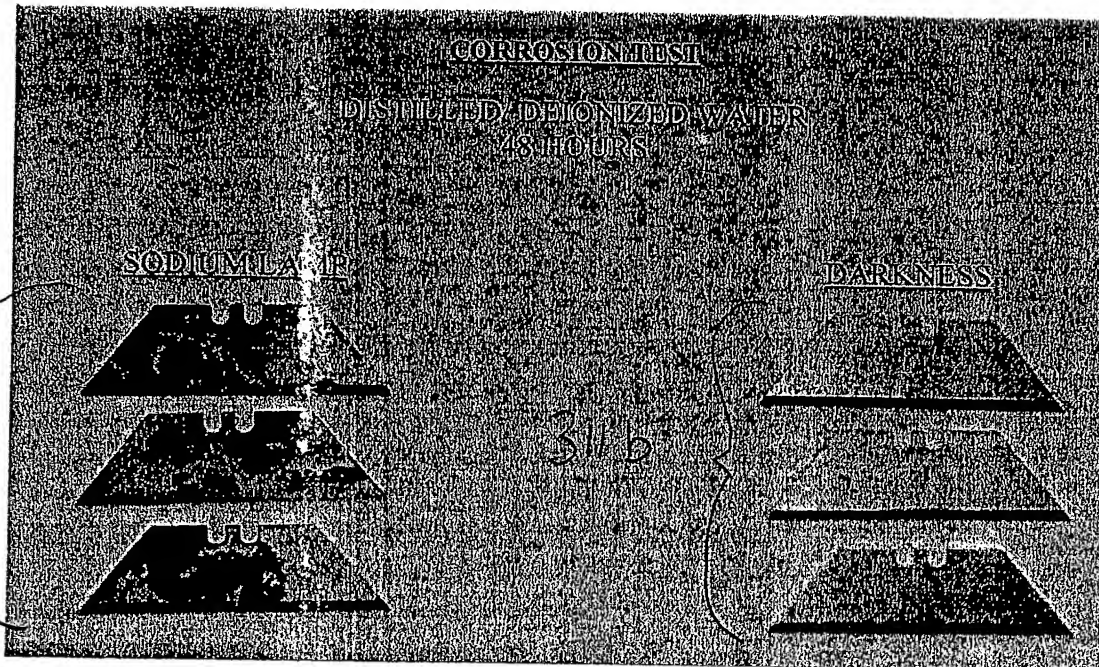
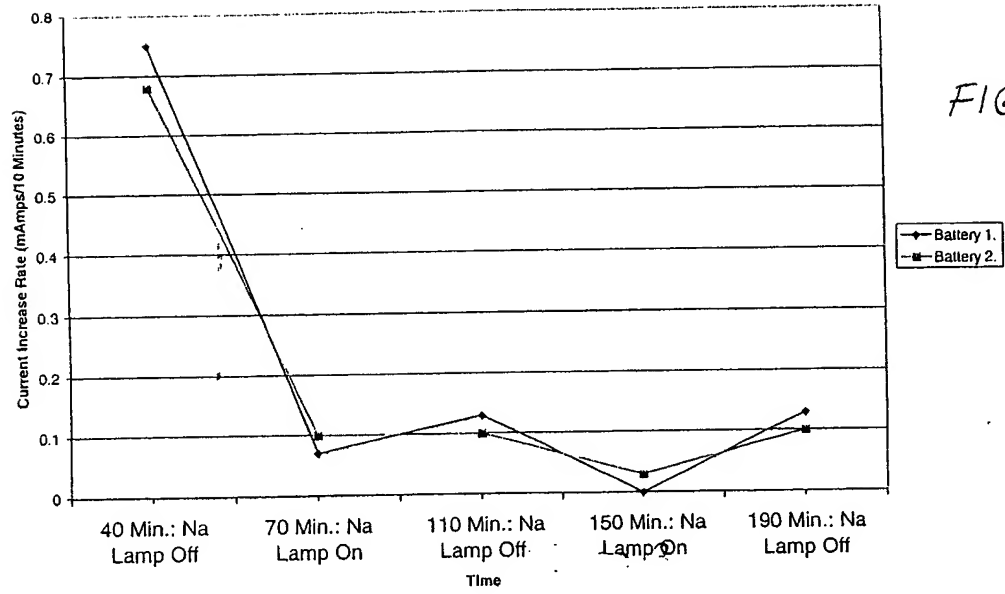
Enhancement of Sodium Chloride Electrolyte With Sodium Spectral Irradiation

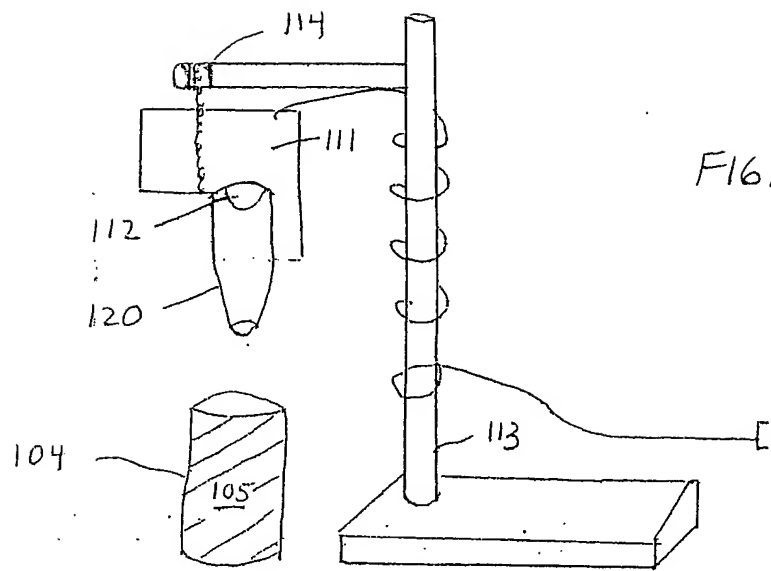


II. Rate of Current Increase in Sodium Chloride Electrolyte Battery

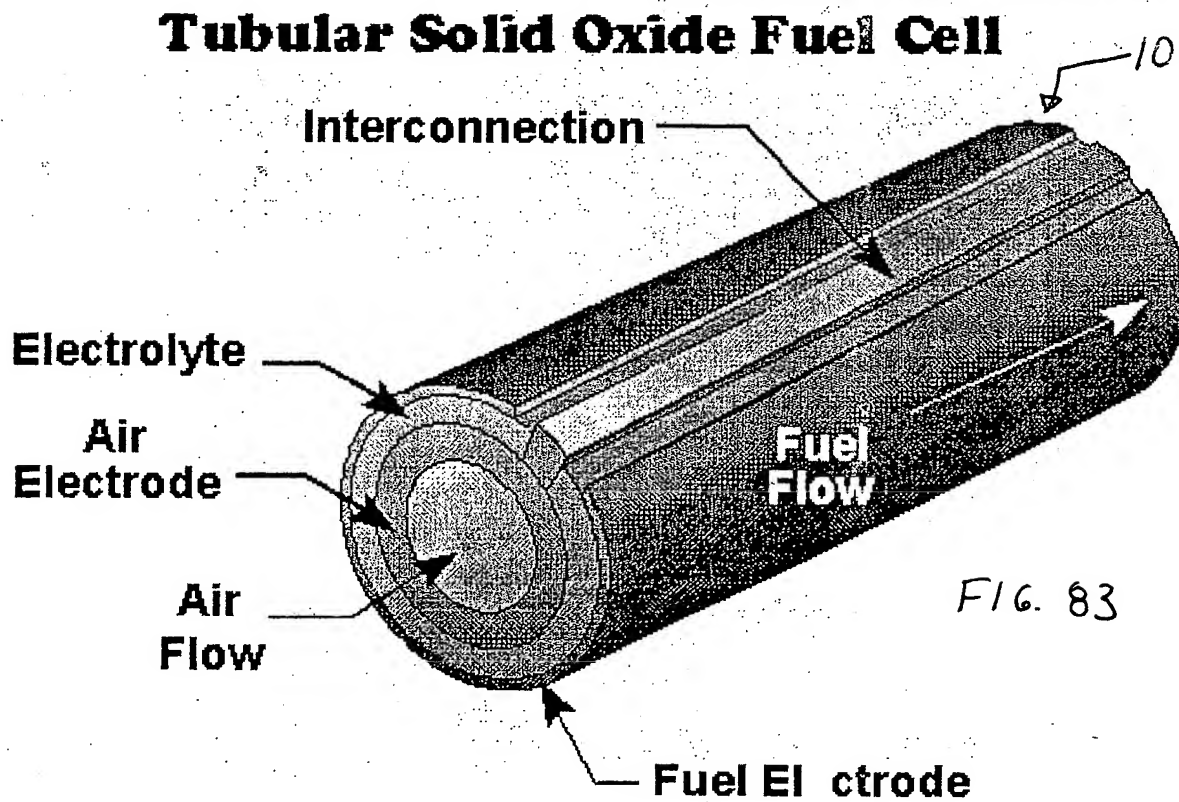
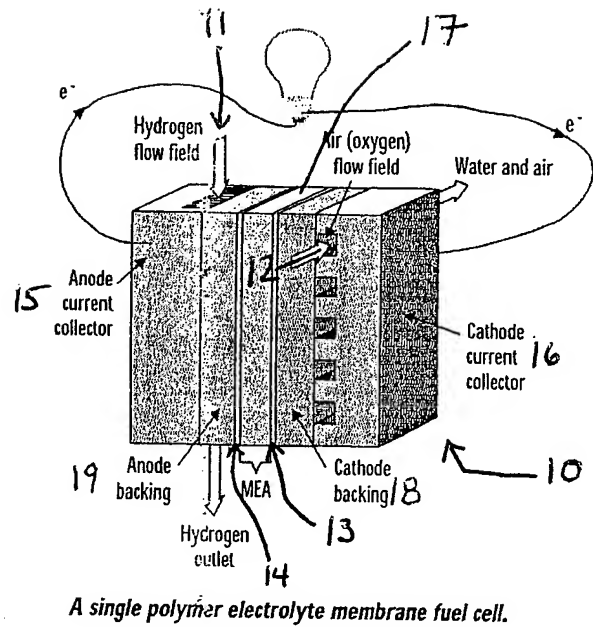
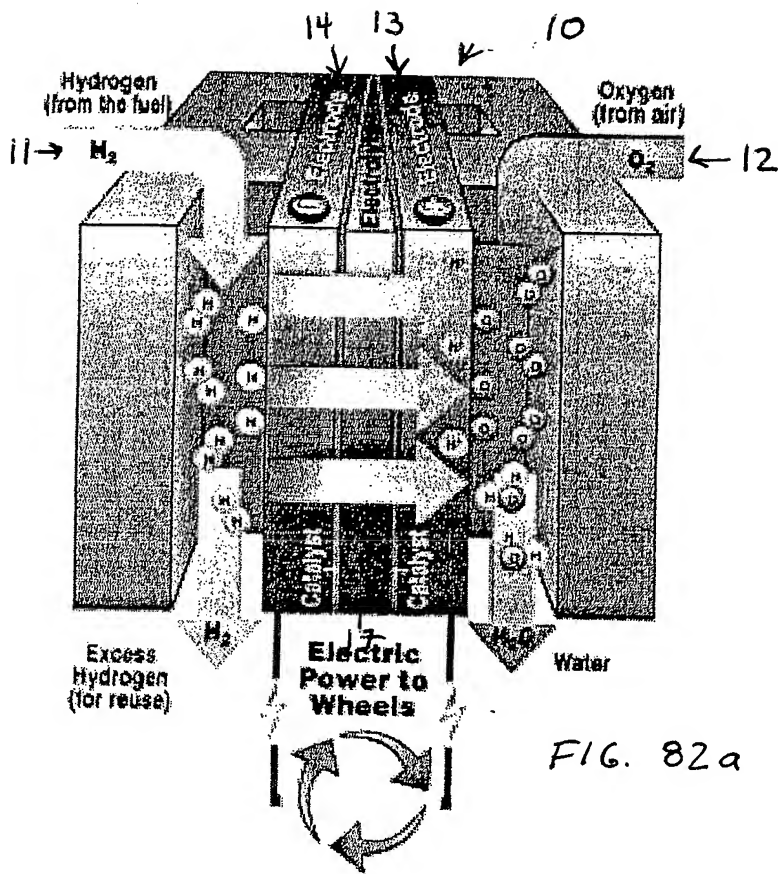


II. Rate of Current Increase in Sodium Chloride Electrolyte Battery

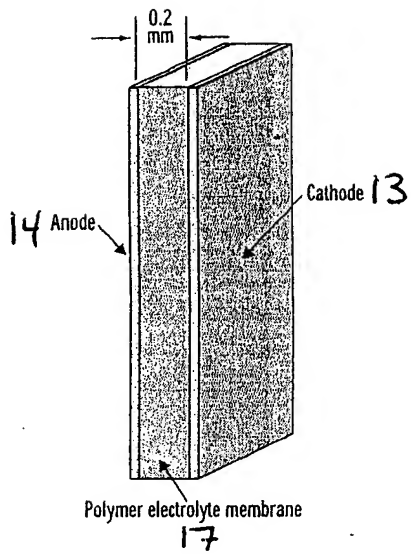




F16,81

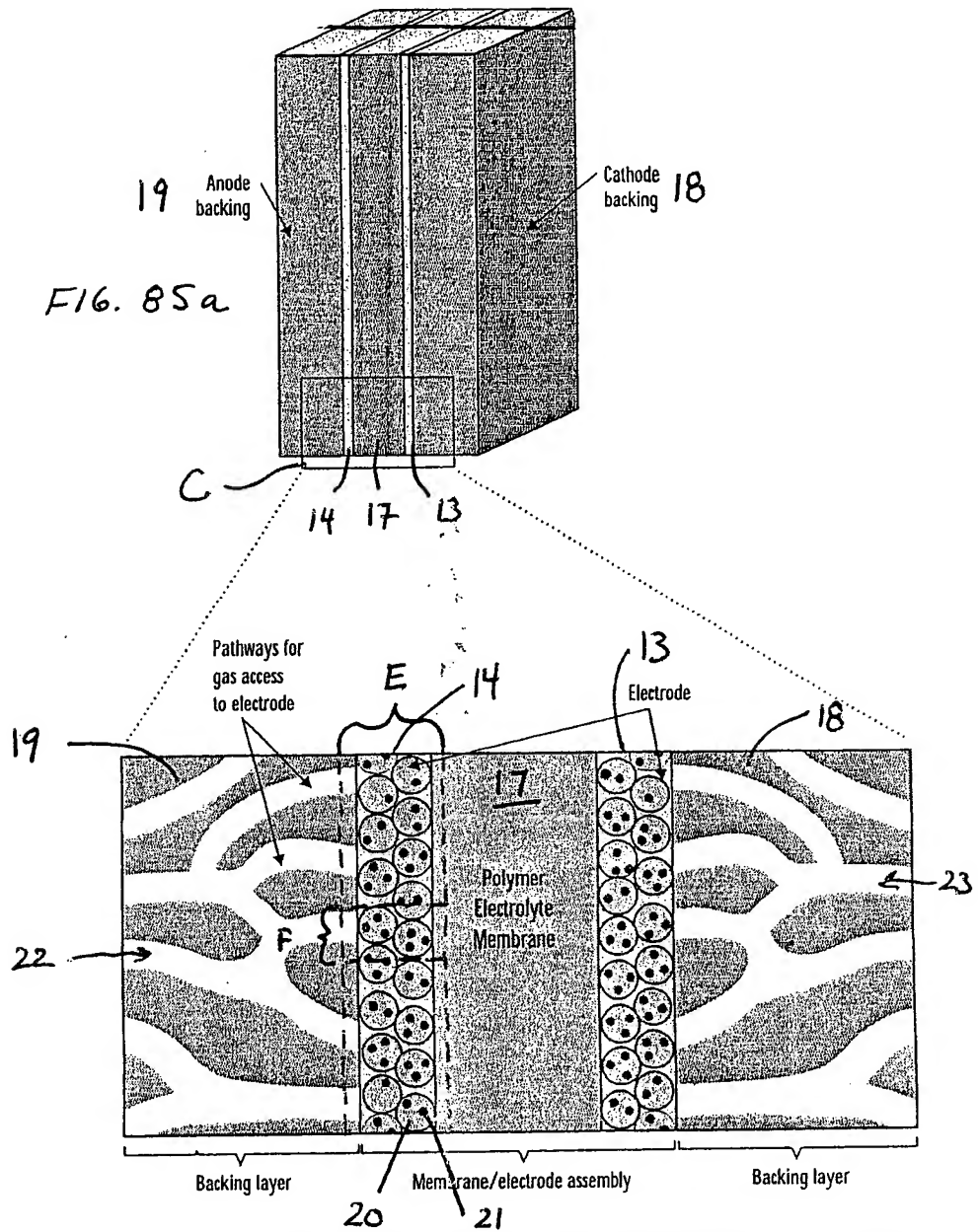


Membrane/electrode assembly with backing layers.



Membrane/electrode assembly

FIG. 84



Enlarged cross-section of a membrane/electrode assembly showing structural details.

FIG. 85b

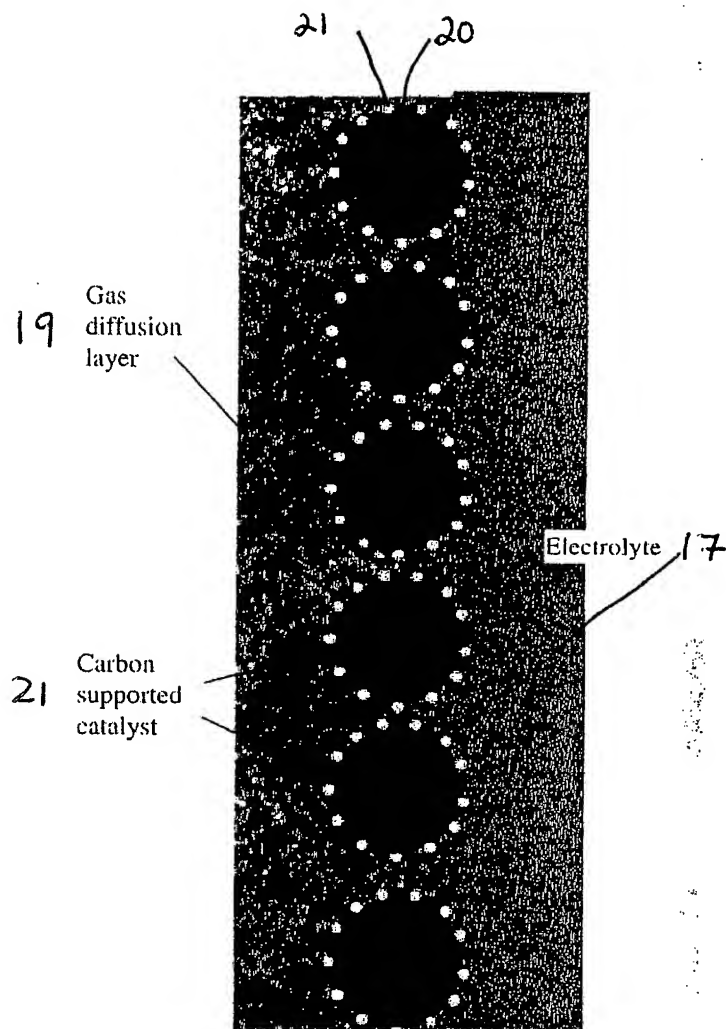


FIG. 86a

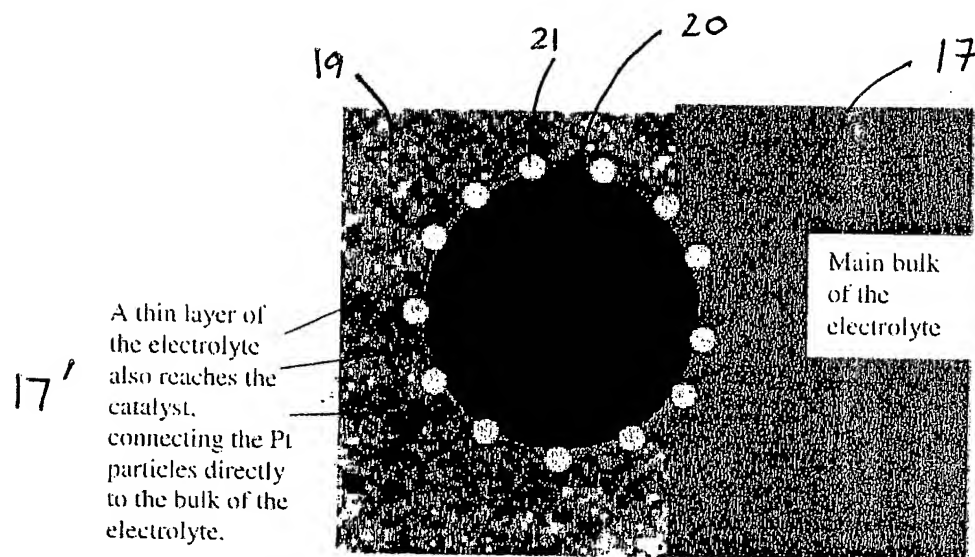
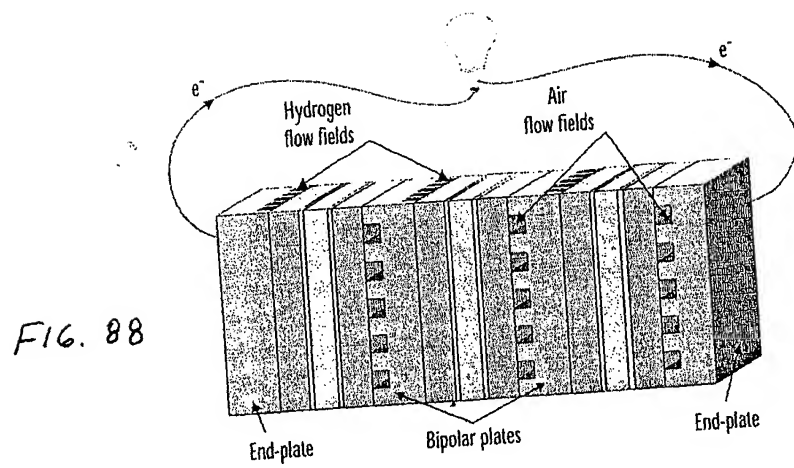
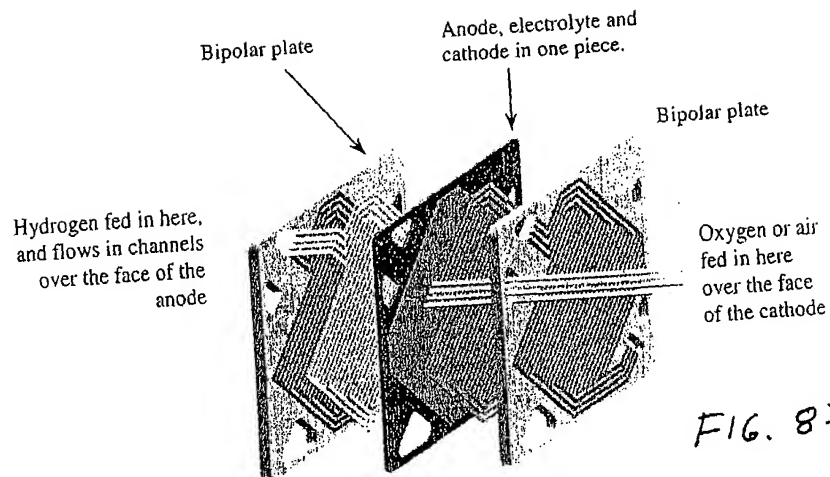


FIG. 86b



A 3 cell fuel cell stack with two bipolar plates and two end plates.